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USSR Report

AGRICULTURE

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MAJOR CROP PROGRESS AND WEATHER REPORTING

LATVIAN WEATHER, CROP CONDITIONS

June Report

Riga SOVETSKAYA LATVIYA in Russian 3 Jul 80 p 3

[Article by Agricultural Meteorologist V. Knava: "The Weather and the Crops"]

[Text] The first two 10-day periods of June in our republic were marked by sunny, dry, warm weather. The maximum air temperature rose to 25-30°. But on some nights the minimum temperature fell to 1-5°, light frost was observed in low-lying areas. Under the conditions of the hot and primarily dry weather the vegetation developed rapidly and actively, the lag in the development of agricultural crops behind the average perennial dates was diminished.

In mid-June the winter grain crops started blooming. The rye is now high, in places more than 1.5 m. The results of the truck route inspection of the winter crops, which was made at that time in the republic, showed that 73 percent of the crops are in good condition, 19 percent are in satisfactory condition and 8 percent are in bad condition, where the plants have been greatly thinned out, are low and have small ears.

In mid-June the early clovers started blooming, while by the end of the month the late clovers started blooming. The grasses on the meadows formed spikes. The height of the sown and meadow grasses is 50-80 cm. It should be recalled that the grasses, which are harvests during the period of budding and the start of flowering, are the best fodder for livestock. The quality of grasses after flowering is considerably lower.

During the last 10-day period of June the weather in Latvia changed, it became cool, the daytime temperature did not rise higher than 18-23°, there were strong thunderstorms. On 24-25 June in a number of western and central rayons the downpours were accompanied by squally winds, in places by hail, the daily maximum precipitation amounted to 40-60 mm, in Talsinskiy Rayon and the vicinity of Roya it amounted to 90 mm, or 1.5 times the monthly standard. The rains supplemented the reserves of moisture in the soil, a shortage of it remains in Balvskiy, Rezeknenskiy and Ludzenskiy

rayons and in places in Aluksnenskiy Rayon, where there has been little rain.

In the next few days moderately warm weather is expected, there will be showers in places in the republic.

Mid-July Report

Riga SOVETSKAYA LATVIYA in Russian 25 Jul 80 p 2

/Article by Agricultural Meteorologist L. Borisovskaya: "The Weather and the Crops"/

/Text/ The second 10-day period of July was characterized by cool, overcast weather with strong thundershowers, in places with hail. The average air temperature was 2-3° below normal. There were heavy downpours on 13-16 July, when the daily maximum precipitation in places amounted to 30-35 mm, in the vicinity of Liyepaya--41 mm. In the southeastern rayons the amount of precipitation was 50-80 mm, which corresponds to twice the 10-day standards, on the Vidzy upland--100-110 mm (three times the 10-day standards). It was somewhat drier in the northeastern part o. the republic. As a result the arable layer of the soil is water-logged.

The flax has developed well. The height of the stalk is 55-65 cm--the same as last year. The conditions for the maturing of grasses were favorable. In places racemes 30-35 mm high formed on the aftermath of the early clovers. In many rayons the milky ripeness of the grain has set in for barley, the height of the plants is 55-90 cm, the density is 400-850 stalks per square meter. The downpours caused the lodging of the crops. The period of intensive tuberization continued for potatoes. The late varieties began to flower. The average weight of the tubers under one bush was 340 g. Under one bush 10-15 tubers had formed.

On the predominant areas 11-13 leaves have grown on the corn, the height of the plants is 60-100 cm.

Over the next few days the nature of the weather will not change. As before it will be cool, cloudy weather with periods of sunshine will continue.

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CSO: 1824

MAJOR CROP PROGRAMS AND WEATHER REPORTING

GRAIN HARVEST NOTES FROM KAZAKHSTAN

[Editorial Report] Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 24 Jul 80 p 1 reports many rayons in Dzhambulskaya Oblast have already reported fulfillment of plans and pledges for grain sales to the state. But in the foothills the harvest is still gathering strength.

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 24 Jul 80 p 1 notes Kurtinskiy Rayon was the first in Alma-Atinskaya Oblast to finish harvesting. Grain [kolosovyye] was harvested from the entire area in 15 days. Dzhambulskiy Rayon in Alma-Atinskaya Oblast will complete the grain harvest in 15 days. Of 145,000 hectares, 110,000 hectares have already been harvested.

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 27 Jul 80 p 1 notes agricultural workers in Taldy-Kurganskaya Oblast have already sent over 1,000,000 puds of grain to the state. They are striving to sell the state as much grain as possible.

Moscow SEL'SKAYA ZHIZN' in Russian 22 Jul 80 p 1 reports the harvest front is expanding on the grain fields of Semirechiye. Agricultural workers have taken the equipment out onto the fields in Taldy-Kurganskaya Oblast. Cutting of the barley and wheat is going well at enterprises in the Steppe rayons--the sovkhozes "Karachok," "Sarybulakskiy" and others. The hot summer allowed the plants to attain growth. In order to avoid grain losses the combine operators have had to set the windrowers for extremely low cutting.

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 26 Jul 80 p 1 indicates enterprises in the southern rayons of Semipalatinskaya Oblast have begun selective harvesting of early grains. Equipment operators in Makanchinskiy Rayon were the first to bring their combines out. They will harvest grain [kolosovyye] from 123,000 hectares here.

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 25 Jul 80 p 1 reports in southern Kazakhstan the harvest is being completed. Agricultural workers in Algabasskiy Rayon, Chimkentskaya Oblast are threshing grain on the last thousands of hectares. Tyul'kubasskiy Rayon got an abundant harvest--19 quintals of

grain per hectare. Agricultural workers in Bugunskiy, Saryagachskiy, Kelesskiy, Kzylkumskiy, Sayramskiy and Chardarinskiy rayons overfilled their plans for grain sales to the state by 150-200 percent. Chimkentskaya Oblast has sent forth over 80,000 tons of overplan grain.

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 24 Jul 80 p 1 reports seven oblasts in Kazakhstan are harvesting. Following those in the southern zone kolkhozes and sovkhozes in Aktyubinskaya and Ural'skaya Oblasts have begun harvesting. During the past week grains [kolosovyye] were cut on more than half a million hectares. The greatest productivity was achieved in Ural'skaya, Dzhambulskaya and Alma-Atinskaya Oblasts. Sovkhozes and kolkhozes in Chimkentskaya Oblast are completing the harvest. Grain crops have been harvested from 516,000 hectares--more than nine-tenths of the area. Chimkent grain growers are threshing 12.6 quintals per hectare. Grain has been harvested from the first 1,500,000 hectares in Kazakhstan.

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 2 Aug 80 p 1 reports agricultural workers in Aktyubinskaya Oblast have begun cutting grain. They have decided to harvest the entire grain area, a little over 2,000,000 hectares, in a short period. Making use of the good weather equipment operators everywhere are laying the rye, barley and wheat into double windrows. Experience shows that the grain mass therein dries well, is thrashed without losses and increases productivity of the combines.

CSO: 1824

CAPACITIES, LOSSES IN SUGAR PROCESSING INDUSTRY

Moscow SAKHARNAYA PROMYSHLENNOST' in Russian No 7, Jul 80 pp 2-6

[Article by M.D. Svirgun, Main Administration of the Sugar Industry of the USSR Ministry of the Food Industry: "Fine Preparation of Sugar Plants for the Season -- A Guarantee for Highly Efficient Work"]

[Text] The principal trends with regard to raising the efficiency of sugar beet production include intensifying the production capacities and production concentration in order to reduce the duration of the beet processing work, raising labor productivity and lowering the specific consumption of fuel, limestone and other production materials required for the processing of beets.

During the 1966-1979 period, the increase in production capacities for the processing of beets amounted to 259,600 tons daily, including 116,000 tons as a result of the construction of 32 new sugar plants and 143,600 tons realized through the expansion, modernization and technical re-equipping of existing plants. On 1 January 1966 there were 296 sugar plants in the country providing an overall capability for processing 535,300 tons of beets daily and on 1 January 1980 -- 324 plants with an overall capacity of 794,900 tons. The average capacity for a sugar plant during this period increased accordingly from 1,810 to 2,450 tons of processed beets daily.

Increases were realized in the level of mechanization of labor-consuming operations and in the automation of production processes and the technology for beet storage and processing was improved.

The existing capacities of the sugar plants and their degree of technical equipping are making it possible during this 1980/81 season, over a period of 115-120 days, to process 91 million tons of sugar beets, as called for in the procurement plan, with high technical-economic indicators.

At the same time, as revealed by the operational experience of past years, the existing production potential at many sugar plants is still not being utilized fully. This is largely the result of unsatisfactory work by the

sugar workers in the raw material zones of industry and poor preparation of enterprises and beet receiving points for the production season.

In 1979 the plans for procuring sugar beets and producing sugar were not fulfilled for the country as a whole.

One reason for the non-fulfillment of the beet procurement plan and also for a reduction in the quality of the beets was the unfavorable weather conditions which prevailed during the beet growing and harvesting periods. Because of the complicated conditions, many leaders of associations and sugar industry enterprises did not provide the beet growing farms with the assistance required for growing the beets and particularly in connection with the timely digging up and shipping of the beets. Nor did they make provision for proper storage of the beets at the beet receiving points, or the sequence to be followed in processing the beets depending upon their quality, so as to prevent great losses in both the raw materials and the sugar.

Many leaders of associations, sugar plants and workers attached to raw material departments have acted in an unprincipled manner with regard to determining the quality of the beets being received. An inspection established the fact that beets are being accepted at a number of enterprises with violations of the state standard taking place; large quantities of non-quality-standardized beets (mainly frost-bitten and thawed out) are being paid for at the rate established for quality-standardized beets.

In 1979 the operational indicators of a number of sugar plants were adversely affected to a considerable degree by shortcomings tolerated during preparation of the technical base for the acceptance and storage of beets, especially for beet storage with forced ventilation. The quantity of covering materials required was not procured and substantial shortcomings also took place in connection with the repair and servicing of the equipment and mechanisms at the beet receiving points.

Failure to observe the established requirements during the acceptance, storage and delivery of beets for processing resulted in increased losses of raw materials. During the 1979/80 production season, the above-plan losses in beets during storage and transport operations amounted to 807,000 tons, including at sugar plants in the RSFSR -- 169,000 tons, in the Ukrainian SSR -- 580,000 tons, Kazakh SSR -- 35,000 tons, Armenian SSR -- 5,000 and in the Moldavian SSR -- 19,000 tons.

It should be noted that the shortcomings observed in the work of a number of sugar plants occurred repeatedly in recent years and still the association and enterprise leaders and specialists failed to draw the proper conclusions or undertake appropriate measures aimed at sharply improving the work of the sugar plants.

In the RSFSR and for the second half of 1979, 42 sugar plants did not fulfill their norms for the processing of beets, 25 sustained above-normal losses in sugar during production operations, 56 exceeded the norm for sugar content in the molasses, 20 expended excessive quantities of limestone for technological purposes and 16 plants experienced over-expenditures of fuel for the processing of beets.

Owing to poor repair work and servicing of equipment during the second half of 1979, sugar plants in the RSFSR stood idle for 138 plant-days, with enterprises of the Privolzhsk association -- 47 plant-days, Kursk -- 24, Orel -- 16 and the Altay association -- 13 plant-days.

One reason for the poor work by a number of sugar plants belonging to the Orel, Tula and Privolzhsk associations is the failure to supply the plants with skilled workers and engineering-technical personnel.

During the second half of 1979, the sugar plants in the Ukrainian SSR utilized their production capacities by 85.9 percent, including the L'vov Production-Agrarian Association by 77.7 percent, Poltava -- by 80.4 and the Ternopol' Association -- by 84.9 percent.

The following sugar plants utilized their production capacities in an especially poor manner: Gaysin -- 64.8 percent, Derebchinskiy -- 70.3, Bershad' -- 77.0, Sokolovskiy -- 77.3, Sobolevskiy -- 79.4, Ivanopol' -- 78, Mizoch -- 78.8, Linovitsa -- 78.9 and Ostrozhskiy -- 79.1 percent.

During tense situations with regard to the plants being supplied with limestone for technological purposes, very weak control is exercised over the expenditures of this material and this has resulted in increased expenditures of limestone compared to the figures for 1978. In some associations, the setting of norms for limestone expenditures for production purposes was carried out in a very unsatisfactory manner. Moreover, no program or campaign is being carried out aimed at achieving economies in its use. Thus, for the second half of 1978 the Kiev Association was given a norm for the expenditure of limestone for technological purposes amounting to eight percent of the mass of procersed beets, with 7.19 percent actually being expended. For the second half of 1979, an average norm of 9.6 percent was established for the plants of the association, with 7.4 percent actually being expended. Such planning for limestone expenditures tends to promote mismanagement in its use. Ukrsakharprom [Sugar Industry of the Ukrainian SSR] must undertake measures aimed at eliminating the existing shortcomings.

During the second half of 1979, owing to unsatisfactory repair work and poor servicing of equipment, the enterprises of the L'vov Association stood idle for 24.5 plant-days, compared to only 3.8 plant-days in 1978.

Some sugar plants in the Moldavian SSR were not fully staffed with leading and engineering-technical workers. During the second half of 1979, the enterprises performed in an unsatisfactory manner, with the exception of the

Bel'tsy Plant. All of the republic's sugar plants failed to fulfill their norms for daily productivity. During the second half of 1979, sugar losses during production amounted to 1.07 percent of the mass of processed beets, against a norm of 0.98 percent; the sugar content in the molasses was 2.92 percent, compared to the plan figure of 2.48 percent. Owing to poor repairing and servicing of equipment, the plants were idle for 17 plant-days. The limestone expenditures for technological purposes amounted to 8.54 percent, against a norm of 7.80 percent of the mass of beets.

Unsatisfactory indicators in the processing of beets were also recorded last year by individual sugar plants in the Kazakh SSR (Alakul'skiy, Dzhambulskiy), Belorussian SSR (Zhabinkovskiy, Slutskiy), Lithuanian SSR (Kedaynskiy), Latvian SSR (Liyepayskiy), Kirgiz SSR (Belovodskiy, Kaindinskiy), Georgian SSR (Gruzinskiy) and Armenian SSR (Spitakskiy).

The food industry ministries of the RSFSR, the Ukrainian SSR and the Moldavian SSR did not undertake proper measures aimed at completing the modernization of the sugar plants, together with a program for syrup extraction, or their timely preparation for the 1979 beet crop processing season. At sugar plants in the RSFSR, against a plan calling for 50,000 tons of beets to be processed with syrup extraction, only 10,000 tons were actually processed, Ukrainian SSR -- 430,000 and 253,000 tons respectively and Moldavian SSR -- 20,000 and 400 tons..

At many sugar plants where the production operations are properly organized, where the technical base has been prepared in a timely and high quality manner for the acceptance, storage and processing of the sugar beets and where proper attention is being given to the organization of labor, to retaining personnel and creating stable labor collectives and to improving the social-domestic conditions, even in the face of the difficulties experienced last year in connection with the deliveries of large quantities of sub-standard beets, high technical-economic indicators were recorded.

This applies to the Meleuz Sugar Plant which, for having successfully fulfilled its plan for economic and social development during 1979, was awarded the challenge red banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee, together with the presentation of a diploma and a monetary award; the Nosovka plant, which during the second half of 1979 fulfilled its plan for average daily processing of beets by 104 percent and sugar yield by 13.65 percent; Nabutovskiy plant -- 102 percent and 13.47 percent respectively, Brodetskiy plant -- 105 percent and 13.23 percent, Gonorovskiy plant -- 105 percent and 13.1 percent, Ramon' plant -- 102 percent and 12.97 percent and many others. The leading operational experience of these and other sugar plants must be studied extensively and introduced into operations at all enterprises of the sugar industry.

During this current and final year of the Tenth Five-Year Plan, the sugar industry workers are confronted by a great and responsible task -- that of

producing 12.71 million tons of granulated sugar, including 9.2 million tons from beets. During the second half of 1980, 8.99 million tons of sugar must be produced from beets.

In order to carry out the established tasks, it will be necessary first of all to prepare all of the sugar plants and beet receiving points for the acceptance, storage and processing of the beets of the new harvest, ensure the timely delivery of fuel, limestone and other production materials to the sugar plants, procure spare parts and components in advance for the carrying out of preventive maintenance work, obtain the required quantities of covering materials for storing the beets, completely staff the enterprises and beet receiving points with the required personnel and ensure that they are properly trained.

The USSR Ministry of the Food Industry, during an expanded board meeting involving the participation of food industry ministries for beet-growing union republics, examined the status of affairs in the sugar industry and outlined specific measures for radically improving the work of the sugar plants.

In the order issued by the USSR Ministry of the Food Industry entitled "Measures for Reducing Losses in Raw Materials and Sugar During the Acceptance, Storage and Processing of Sugar Beets of the 1980 Harvest," the principal measures and recommendations aimed at reducing losses in raw materials and sugar during the acceptance, storage and processing of beets, improving the utilization of production capacities and raising the efficiency of production operations and the quality of work were approved.

A most important task of all sugar industry workers and of workers attached to the food industry ministries of the union republics is that of carrying out the established plans in a timely manner.

The new 1980/81 production season requires the preparation of 803 permanent and 15 temporary beet receiving points and 324 active sugar plants. The plans for this current year call for the capacities of the plants to be increased by 11,500 tons through the modernization and technical re-equipping of existing plants.

During the repair period at the sugar plants, the plans call for the installation of 22 diffusion units of continuous action, 311 filters of various designs, 222 evaporation and vacuum units, 540 automatic centrifuges, 12 lime-gas furnaces, 24 steam boilers, 10 steam turbines and other progressive units of equipment.

At beet receiving points, the plans call for the construction of 1.5 million square meters of hard surface area, including 1.33 million square meters with forced ventilation, the installation of 189 motor vehicle scales having a raised load capacity, 74 lines for selecting and analyzing beet samples for contamination and weediness, 3,636 fans and other items of equipment.

The expenses for carrying out current and capital repair work at the sugar plants and beet receiving points will amount to approximately 400 million rubles.

The sugar industry workers must intensify their preparation of the sugar plants and beet receiving points for the season and for the acceptance, storage and processing of the beets of the new harvest and they must devote special attention to eliminating those shortcomings exposed during the past production season, particularly in connection with expanding and increasing the delivery channels and cleaning and washing the beets, which turned out to be a "bottleneck" at many sugar plants owing to the delivery for processing of beets having high levels of contamination and weediness. This work must be carried out rapidly and in a high quality manner.

The committees for accepting the sugar plants following repair operations must carry out a more thorough check on the preparation of the plants and beet receiving points for the production season and they must impose strict requirements on the workers of enterprises with regard to eliminating those shortcomings uncovered during the repair of equipment, mechanisms and installations. Prior to the commencement of production operations, a thorough check must be carried out on the equipment and installations, so as to ensure that the shortcomings are eliminated prior to the plants being placed in operation.

The associations and sugar plants must develop and implement measures at the beet receiving points and sugar plants which will ensure the continuous loading and unloading of beets, fuel and limestone into and out of railroad freight cars, with special attention being given to the preparations for and organization of this work for autumn and winter conditions and with every attempt being made to ensure that the idle time of the freight cars during loading and unloading operations does not exceed the established norms.

In order to complete the great volume of work associated with preparing the sugar plants and beet receiving points for the new production season, vital labor must be performed on a daily basis by all workers attached to sugar industry enterprises and associations.

In order to ensure the fulfillment by each sugar plant of the 1980 plans for beet procurements and sugar production, one of the most important tasks of the sugar industry workers must necessarily be that of furnishing maximum assistance to the beet growing farms in growing the sugar beets and raising their quality.

In accordance with the example set by beet growers and sugar plant workers in Yampol'skiy Rayon of Vinnitskaya Oblast, business-like collaboration should be organized more extensively among the kolkhozes, sovkhozes, transport organizations, Soyuzsel'khoztekhnika and sugar plants, in the carrying out of all operations concerned with the harvesting, shipping, storage and processing of the beets in accordance with a single complex

plan, a plan which will ensure the prevention of crop losses and maximum sugar production from each hectare of a beet field.

It can be stated with confidence that the collective of sugar industry workers, numbering many thousands, similar to all workers of our homeland, are making preparations for the 26th Congress of the Communist Party of the Soviet Union. During such preparations, it is expected that they will launch an extensive socialist competition for the fulfillment and overfulfillment of the 1980 plans for sugar production, for improving the quality of the products being produced and for raising production efficiency.

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VORONEZH CONFERENCE ON AGRICULTURAL PRODUCTION IN CENTRAL CHERNOZEM ZONE

Report on Proceedings of Conference

Krasnodar SEL'SKIYE ZORI in Russian No 5, May 80 p 2

[One page report on proceedings of conference]

> [Text] In order to obtain maximum grain yields, raise the fertility of soils and improve the culture of farming, it is necessary at the present time to properly direct the entire arsenal of agrotechnical methods, utilize all available potential and reserves and subordinate to this goal the work of the local party, soviet and agricultural organs, farm leaders and specialists and kolkhoz and sovkhoz workers.
>
> L.I. Brezhnev

A zonal conference dedicated to the further development of agricultural production at kolkhozes and sovkhozes in the central-chernozem economic region was held in the city of Voronezh in early March. Responsible workers from the CPSU Central Committee, the USSR Council of Ministers and the Council of Ministers from the RSFSR, union and republic ministries and departments, the 1st secretaries of oblast party committees and the chairmen of oblast executive committees, representatives of local party and soviet organs, leaders and specialists from kolkhozes, sovkhozes and agricultural organs, scientists and leading production figures participated in the work of this conference.

The conference was opened by Candidate Member of the Politburo of the CPSU Central Committee and chairman of the RSFSR Council of Ministers M.S. Solomentsev. To the tune of thunderous applause, he conveyed to all those participating in the conference and to all rural workers in the central chernozem zone the heartfelt greetings of Comrade L.I. Brezhnev and the hope that they achieve new successes in their work as well as good health, prosperity and great personal happiness.

"The Council of Ministers of the Russian Federation" stated M.S. Solomentsev, "has handed down a decision calling for this present conference

to include a detailed discussion of the status and measures aimed at further improving agriculture in the central chernozem economic region.

The development of this important branch is very closely associated with growth in the welfare of the people and with the carrying out of the social program developed during the 25th party congress. This is why the CPSU Central Committee and the government are devoting unremitting attention to agriculture and to accelerating increases in the production of farming and animal husbandry products.

The present period is characterized by great undertakings and events. The recent elections to the supreme soviets of union and autonomous republics and to the local soviets of people's deputies served as new and convincing proof of the strength and solidarity of the bloc of communists and non-party people and they have clearly demonstrated the stability of the socialist system and the great unity of thought, aspirations and effort of all Soviet people as they rally closely around the Leninist communist party.

In his speech before the voters of the Baumanskiy electoral district of Moscow, Comrade L.I. Brezhnev summarized the results of the past decade and he assigned the tasks for the future. He emphasized that our program is one of peaceful creation, further transformation of the country's immense expanses and multiplication of the material and spiritual wealth of the Soviet people.

Our country is approaching the end of the Tenth Five-Year Plan. Its successful fulfillment will depend to a considerable degree upon the results achieved during 1980. Thus the principal motto must be predicated upon selfless and creative work by each worker and each production collective, high organizational ability and discipline, a creative approach to work initiative and persistence.

The November (1979) Plenum of the CPSU Central Committee assigned the task of raising the stability of agricultural production to a considerable degree, in the interest of ensuring more complete satisfaction of the population's requirements for food products and those of industry -- for raw materials.

In solving this task, an important role will be played by the rural workers in the chernozem zone. The kolkhozes and sovkhozes in the TsChO [central chernozem zone] are making a worthy contribution towards agricultural development throughout the republic. A large quantity of grain is being produced here and it is here that a considerable portion of the production of such important technical crops as sugar beets and sunflowers is concentrated. Within the zone there are many kolkhozes and sovkhozes which quite properly can be referred to as beacons of agricultural production.

However, while recognizing the accomplishments already realized, it nevertheless can still be said that full use is still not being made of the

potential that is available for increasing the production of farming and animal husbandry products in the central chernozem zone. The funds being invested in agriculture are not returning the required yield. The zone's kolkhozes and sovkhozes can and must obtain higher agricultural crop yields, raise the productivity of animal husbandry and develop production at a rapid tempo. The task consists of constantly uncovering and utilizing the available potential and placing in operation all of the reserves that the farms have at their disposal. Towards this end, an atmosphere of high exactingness, organizational ability, a creative attitude towards work and irreconcilability towards violations of scientific recommendations and other shortcomings must be created in all areas.

Those participating in the conference listened to and discussed a report on the status of and measures for the further development of agricultural production at kolkhozes and sovkhozes in the central chernozem economic region. This report was delivered by the chairman of the Presidium of the All-Russian Branch of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin], Academician I.S. Shatilov.

A speech was also delivered during the conference by Candidate Member of the Politburo of the CPSU Central Committee and chairman of the Council of Ministers for the RSFSR, M.S. Solomentsev.

The conference examined and approved recommendations for raising the efficiency and stability of agriculture in the central chernozem zone.

The participants in the conference unanimously adopted a letter addressed to the CPSU Central Committee and to the General Secretary of the CPSU Central Committee and chairman of the Presidium of the Supreme Soviet of the USSR, Comrade L.I. Brezhnev.

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Solomentsev Speech

Krasnodar SEL'SKIYE ZORI in Russian No 5, May 80 p 3-9

[Speech by M.S. Solomentsev, Candidate Member of Politburo of CPSU Central Committee and chairman of the RSFSR Council of Ministers: "Stable Growth for the Production of Field and Farm Products"]

[Text] The CPSU Central Committee is displaying a tremendous amount of concern for improving agriculture and ensuring that our Soviet people are supplied with more and better food products. The Leninist agrarian policies of the party, the foundation for which was laid during the March (1965) Plenum of the CPSU Central Committee, are being implemented successfully in our country.

By firmly following the planned program, the party is consistently solving the key problems of agricultural production. During the Tenth Five-Year

Plan, the logistical base of the kolkhozes and sovkhozes has continued to become stronger and a noticeable increase has taken place in the complex mechanization of labor in farming and animal husbandry. Great volumes of work have been carried out in connection with the use of chemical processes and land reclamation and in the acceleration of scientific-technical progress. Based upon interenterprise cooperation and agroindustrial integration, extensive use has been made of the processes of production specialization and concentration.

The Russian Federation serves as a fine example of this. During 4 years of the Tenth Five-Year Plan alone, approximately 72 billion rubles worth of state and kolkhoz capital investments, or 42 percent more than during the 1971-1974 period, were allocated for the development of agriculture throughout the republic. More than one million hectares of drained land and one and a half million hectares of irrigated land were placed in operation during this period. The fixed productive capital of an agricultural nature at the kolkhozes and sovkhozes was increased by a factor of 1.6.

As a result and notwithstanding the rather complicated weather conditions, during the current five-year plan the average annual production of gross agricultural output in the republic increased by six percent, grain production -- by 13, sugar beets -- by 24, meat -- by 6, milk -- by 4 and eggs -- by 20 percent. The procurements of these products increased. Increases were also recorded in the numbers of all types of livestock and poultry.

However, while acknowledging the successes achieved in agricultural development, it should also be recognized that the rates of growth in this branch are inadequate, the plans for the production and sale to the state of agricultural products are not being carried out by many kolkhozes and sovkhozes and full use is not being made of the available potential.

In the November (1979) decree of the Plenum of the CPSU Central Committee, emphasis is placed upon the fact that one of the most important tasks at the present time is that of producing sufficient quantities of high quality food products and in a broad variety. This is why the party will allocate considerable monetary and material resources for agriculture in the future. At the same time, great importance is attached to employing these resources in a thrifty manner and to raising the responsibility of the farm leaders and specialists for the efficient utilization of the tremendous wealth which the kolkhozes and sovkhozes have at their disposal at the present time. In his report delivered before the November Plenum of the CPSU Central Committee, Comrade L.I. Brezhnev assigned the task of ensuring that a strengthening of the logistical base in the rural areas serves to affect more noticeably the level of food supply for the population. This requirement of the party must become a matter of major concern in the work being performed by the party, soviet and economic organs and by all rural workers.

The central chernozem economic region is a large industrial center and one of the republic's leading agricultural zones. The region is located in the center of the European part of the RSFSR. Here there is fertile soil, a comparatively favorable climate, outstanding personnel and fine traditions. Owing to these factors, the central chernozem zone is ranked among the chief producers of agricultural products not only for internal consumption but also for deliveries to other industrial centers of Russia. Occupying six percent of the overall land area of the Russian Federation, five oblasts in the zone produce approximately 10 percent of the republic's total gross agricultural output, almost one half of the sugar beets, 16 percent of the fruits and berries, 15 percent of the sunflower seed and 10 percent of the grain and animal husbandry products. Hence, a need is indicated for increased attention to agricultural development and for higher requirements and greater responsibility with regard to accelerating improvements in this branch. And it bears mentioning that many kolkhozes and sovkhozes are achieving great successes in increasing the production of farming and livestock products.

An examination of the overall problem forces one to admit that agricultural development in the economic region, especially in recent years, has aroused serious concern within the party's Central Committee and the government of the republic. As is known, a number of zones in the oblast were subjected to fair criticism during the 25th party congress and the July (1978) Plenum of the CPSU Central Committee. A special decision was handed down by the party's Central Committee in connection with Tambovskaya Oblast.

The indicators for agricultural development in the central chernozem zone are lower than those for other regions of our republic. Compared to the Russian Federation on the whole, where gross agricultural output during the period following the March (1965) Plenum of the CPSU Central Committee increased by 38 percent, in the Volga region -- by 40 and in the north Caucasus -- by 48 percent, in the chernozem zone -- only by 27 percent and in Kurskaya Oblast -- by 19 and Tambovskaya Oblast -- only by 13 percent.

Grain production is increasing slowly at kolkhozes and sovkhozes in the zone, the sugar beet and sunflower yields have decreased in a number of rayons and animal husbandry is developing at an inadequate pace.

During the current five-year plan, the rate of output growth fell compared to the ninth five-year period. In Voronezhskaya Oblast the rate of growth was nine percent, in Belgorodskaya and Lipetskaya oblasts -- three percent, in Kurskaya Oblast -- two percent and in Tambovskaya Oblast the production of goods not only did not increase but in fact it even decreased three percent.

Meanwhile, during the past three five-year plans, more than 13 billion rubles worth of state and kolkhoz capital investments were invested in agriculture in the region. This figure exceeded the total amount so invested during all of the previous years of soviet rule. During this period the fixed

productive capital of an agricultural nature at kolkhozes and sovkhozes increased by fourfold and the deliveries of mineral fertilizers -- by a factor of 2.5. The machine-tractor pools on the farms were almost completely restored or increased considerably, the detachment of farm specialists and leaders improved immeasurably in terms of both numbers and quality, the network of scientific institutes was expanded and a greater contribution was made to production by these institutes.

The comprehensive strengthening of the logistical base and improvements in the system of economic relationships and in the forms for organization and control, which comprise the foundation for the agrarian policies of the party during this modern stage, are making it possible today to increase the production of agricultural products at more rapid rates and in all areas. Unfortunately, full use is not being made of these favorable factors for substantially accelerating the rates of development for kolkhoz and sovkhoz production.

What is the problem? Why is it that agriculture, which enjoys relatively favorable conditions and which receives tremendous assistance from the state, is developing slowly? Certainly, there is no simple answer for this question.

Some comrades feel that the problem is caused by the poor weather. Truly, the weather has not favored the farmers, especially last year. But earlier there were dry years. During the Eighth Five-Year Plan, a drought was experienced in 1967 and during the Ninth Five-Year Plan -- in 1972 and 1975. However, the production rates were higher then. The farms were not insured against adverse conditions. Yet the products had to be supplied and in increasing volumes.

Others maintain that very little mineral fertilizer is being made available and that there is a shortage of equipment. Yes, the farm requirements for both mineral fertilizers and equipment are still not being met fully. Nevertheless, the party's Central Committee and the government are devoting a tremendous amount of effort to strengthening the logistical base of the kolkhozes and sovkhozes. And this is producing the desired results. As already mentioned, kolkhoz-sovkhoz production is today equipped with highly productive machines and equipment and it has other material resources at its disposal. Yet the desired return is still not forthcoming.

Finally, there is a point of view which is held by many specialists and scientists. It derives from a thorough analysis and study of the status of affairs in the various areas. The slow rates of development for agriculture in the zone are for the most part explained by violations of the scientifically sound system of farming, by failure to observe the crop rotation plans and crop structure, by shortcomings in selection and seed production work, by crude violations of the technology employed in the cultivation of agricultural crops and by weak utilization of scientific achievements and leading experience. In short, by serious neglect in those

operational elements upon which, in the final analysis, improvements in soil fertility and a high culture of farming are dependent. These are not objective but rather subjective factors and they are fully and primarily dependent upon the level of control and management and upon the establishment of organizational work at the kolkhozes and sovkhozes, agricultural organs and scientific institutes.

For example, more than 200 of the 520 kolkhozes and sovkhozes in Kurskaya Oblast are annually obtaining yields for their grain, sugar beet, forage and other crops which are one and a half times higher than the average figures for the oblast and roughly 50 farms are obtaining yields which are two to two and a half times higher. Moreover, these farms are located in all of the oblast's rayons and they differ very little from the other farms in terms of the degree to which they are supplied with equipment and fertilizers. The basis for their success -- a high culture of production and more strict observance of technological discipline and the scientific recommendations. A scientifically sound structure for the areas under crops has been introduced here, the plowing of autumn fields for winter fallow is carried out early, 8-10 tons of organic fertilizers are applied per hectare of field and seed production work is well organized. These farms have permanent cadres of machine operators, all of whom are experienced specialists who carry out their work on the basis of fine labor traditions. Quite another situation prevails at the remaining farms within the oblast. Only 3 tons of organic fertilizer is applied per hectare, only 60 percent of the autumn fields is plowed early, the winter crop fields constitute only 16 percent of the arable land, with a considerable portion of this land being sown late and pulse crops occupy only 2 percent of the grain fields. Each year, tens of kolkhozes and sovkhozes fail to satisfy their own seed requirements for spring sowing, violations occur in connection with field work schedules and the technology employed in the cultivation of the agricultural crops and so forth. This then explains the reason for the low yields and the inadequate rates for agricultural development in the oblast.

The same situation is taking place in other oblasts throughout the zone. In Lipetskaya Oblast, where relatively similar conditions prevail, 20 percent of the farms have indicators which are higher than the figures for the oblast, in Tambovskaya Oblast -- 29 percent and in Belgorodskaya and Voronezhskaya oblasts -- almost one half of the kolkhozes and sovkhozes. If success could be achieved in raising the backward farms at least to the level of the average oblast indicators, the gross output could be increased by roughly 20-30 percent. And if all of the farms realized improvements in their operations, the production of agricultural products would almost double. The raising of backward kolkhozes and sovkhozes to the level of leading ones represents a tremendous reserve for increasing the production of farming and livestock products.

The foundation for all agricultural production is our chief wealth -- land. One very important state task consists of ensuring the conservation and

productive utilization of the land and comprehensive improvements in the fertility of the soil.

The farms in the zone have a special wealth at their disposal -- Russian chernozem soil, a unique type of soil not found elsewhere. The well known soil scientist V.V. Dokuchayev stated: "...there are no figures which can measure the strength and vigor of the king of soils, our Russian chernozem; it has been, is and will continue to be the breadbasket of Russia" (Moscow, 1949, Vol. 3, p 358).

But by no means is this meant to imply that high yields arise here of and by themselves. Unfortunately, up until now many of the kolkhozes and sovkhozes have relied exclusively upon the natural fertility of the chernozem soils and have done very little to maintain or improve the fertility.

All soils, and particularly chernozems, require increased attention. Their fertility levels must be improved rather than allowed to diminish. This requires the strict observance of a scientifically sound system of farming and the carrying out of an entire complex of agrotechnical measures.

The scientists believe that improvements in the fertility of chernozem soils, distinct from other types of soil, commence with their cultivation. For it is the cultivation of the chernozems that serves as a determinant factor with regard to the effectiveness of fertilizers, crop rotation plans and other agrotechnical measures.

Fall plowing occupies a special place in a soil cultivation system. But each year many kolkhozes and sovkhozes fail to carry out their fall plowing plans. At times, up to 20 percent of the crops are sown following spring plowing. Very little early fall plowing is being carried out.

In recent years, very little attention has been given to such an important agrotechnical measure as the removal of stubble immediately following harvest work. Whereas 10-15 years ago this soil cultivation method was mandatory for all kolkhozes and sovkhozes, today only individual farms are carrying out shallow plowing, despite the fact that it furnishes a considerable increase in yield.

During the conference, considerable alarm was expressed regarding the need for intensifying the campaign against water erosion. A situation cannot be tolerated wherein millions of tons of humus are washed away annually, with farms losing up to one half of their crops on eroded lands during some years. The losses are numbered in hundreds of millions of rubles, losses which can never be recouped. This requires the rapid introduction into operations and the complete mastering of the complex soil-protective system of farming, the scientific principles of which were set forth for chernozem steppe regions by V.V. Dokuchayev.

The experience of a large number of kolkhozes and sovkhozes testifies to the high effectiveness of soil-protective measures. Unfortunately, an anti-erosion complex of measures is not being carried out on many farms; the resources allocated for this purpose are not being employed. For example, during 4 years of the current five-year plan, only 52 percent of such resources were expended in Lipetskaya Oblast and in Tambovskaya Oblast -- only 20 percent. Moreover, the proportion of capital expenditures for soil protective measures was extremely small and, on the average for the region, amounted to only one percent of the overall capital investments allocated for agricultural development.

What is the result? At the end of the last century, under semi-feudal conditions in Russia with the principal means of production being oxen and the wooden plow, the peasants succeeded in creating such oases as the Kamennaya Steppe, a type of testimonial to soil protective systems. At the present time, agriculture has powerful equipment at its disposal and tremendous scientific-technical potential has been accumulated and yet results in the campaign against erosion are visible only on individual sectors and not on large tracts or throughout the zone as a whole.

The campaign against erosion has been organized poorly on a majority of the farms. Even such highly effective measures as plowing crosswise to slopes, non-mouldboard plowing, dibbling and trenching of fields, regrassing and others, which make it possible to reduce the washing away of soils and retain moisture on the fields, are not being carried out. For example, non-mouldboard plowing is being employed on six percent, trenching and dibbling -- on 13 and regrassing -- on 10 percent of the eroded soils. Windbreak strips have been installed only on 20,000 hectares.

In accordance with the system of anti-erosion measures, the plans call for the zone to have 550,000 hectares of forest plantings, including 200,000 field protective forest strips. Actually, there are 340,000 hectares of plantings and only 120,000 forest strips. The plans for further plantings are not being carried out.

The campaign against wind and water erosion and the carrying out, where necessary, of afforestation work must be viewed as a most important state undertaking. It is a requirement of the party and one which must be implemented in a very strict manner.

Within the system of measures aimed at raising the fertility of land, an important place is occupied by fertilizers and primarily organic fertilizers. There is a popular saying which holds that "good land profits from farmyard manure for a period of 10 years."

Studies carried out at the NIISKh TsChP [Scientific Research Institute of Agriculture for the Central Black Earth Belt] imeni V.V. Dokuchayev have established the fact that no less than 6 tons of organic materials must be applied per hectare annually in order to maintain the fertile strength of

chernozem soil. If this is not done, the nutrient losses will not be made up. Unfortunately, the applications of organic fertilizers on many farms are 2-3 times less than the norm. For example, in Voronezhskaya and Lipetskaya oblasts the average annual application during the current five-year plan has been 2 tons per hectare of arable land and in Tambovskaya Oblast -- less than one and a half tons.

Two years ago, during a zonal conference held in Voronezh, a complex program of measures was approved for raising the fertility of soils. Although this program calls for no less than 40 million tons of organic materials to be applied to the fields annually, only 25-28 million tons are being applied.

According to the most humble estimates, more than 100 million tons of humus, or almost 10 tons per hectare of arable land, are lying unused on farms throughout the region. The amount of farmyard manure that has accumulated at a number of large livestock enterprises is so great that the surrounding environment is seriously threatened.

As is known, a great amount of work is being carried out throughout the zone in connection with the concentration of animal husbandry. The livestock from individual farms are being transferred to large-scale specialized enterprises and this is disrupting the established relationships between the farms and the fields. Farmyard manure is accumulating at the complexes, while at the same time the kolkhoz and sovkhoz fields from which the livestock were taken are left without organic materials. The land requires that this farmyard manure be returned and also that the nutrients absorbed in a crop be restored. This is a difficult task. The process of concentration in animal husbandry is becoming more intense. Inter-rayon associations and enterprises are already making an appearance. And the potential must be found for utilizing, in the manner intended, each kilogram of organic fertilizer obtained here.

Many farm leaders, coincidental with the organization of agrochemical associations, have ceased to concern themselves with the shipping of organic fertilizers, preferring instead to transfer this work entirely to the newly created subunits. Compared to 1975, when the kolkhozes and sovkhozes delivered 19 million tons of organic materials to the fields using their own resources, last year only 10 million tons were so delivered. The farms in Kurskaya Oblast are moving only 20 percent of the fertilizers using their own resources, in Voronezhskaya Oblast -- 27 and in Lipetskaya Oblast -- 35 percent.

The poor utilization of farmyard manure aggravates the consequences of a drought, which quite often hampers the operations of farms in the zone. Even K.A. Timiryazev wrote that in addition to being a source of food for plants, fertilizers also serves as a means for combating droughts. According to his estimates, water consumption for the formation of 1 quintal of grain on a well fertilized field is two times less than that on a non-fertilized field.

The agricultural organs must develop and implement measures which will make it possible to apply farmyard manure to fields in a timely and complete manner. The experience accumulated in the republic reveals that a more bold approach must be employed in creating large-scale and well equipped specialized enterprises and detachments for the production and handling of organic materials.

There is still no other problem that is associated with raising the fertility of the soil. Recently the kolkhozes and sovkhozes have begun applying greater quantities of mineral fertilizers, whereas farmyard manure applications are not increasing. This has led to a sharp increase in the land areas having raised levels of acidity. Since 1972 the amount of such land has increased by 400,000 hectares and has reached 3.7 million hectares. Careful consideration should be given to this figure -- one third of such extremely valuable soils as the Russian chernozems has turned out to be sour.

The leaders of farms and the specialists refer to a shortage of lime, while at the same time 20 million tons of defecate have accumulated at the sugar plants. And indeed defecate, in addition to being the calcareous waste products of sugar production, is also the most fertile portion of that soil shipped together with the beet roots. It must be returned to the soil. The time is at hand for making a determination as to how best to utilize the defecate and what is required in order to do this. This also applies in full measure to the fertile layers of soil removed during the working of quarries and pits and for the construction of industrial enterprises.

One important reserve for raising cropping power and increasing the gross yields of grain and other farming products is that of implementing improvements in the structure of the area under crops and in the mastering of the crop rotation plans. Recently there have discussions concerning the fact that the farms in the zone are overloaded with grain crop and sugar beet plantings and thus not enough space is available for fallow. Hence the harvests and gross yields are low. Thus emphasis is being placed upon reducing the grain crop plantings. Can this be permitted? In the recommendations handed down by the All-Russian Branch of VASKhNIL and the Scientific Research Institute of Agriculture imeni V.V. Dokuchayev, it is stated that grain crops should occupy one half of the arable land and pulse crops -- no less than 10 percent. Thus the grain crop and pulse crop plantings must constitute 60 percent of the arable land. Studies and the experience of leading farms have shown that such a structure ensures the greatest yield of products per unit of arable land. Unfortunately, at the present time the average proportion for grain crops and pulse crops in the zone is less than 55 percent and the proportion of pulse crops -- only 5 percent.

A word or two concerning fallow. Nobody questions the importance of fallow for raising the productivity of fields. It has already been stated on more than one occasion that there should be as much fallow as that required for a

scientifically sound system of farming. If it is considered feasible to expand a fallow field at a particular farm, then every attempt must be made to do so. Moreover, by no means is it mandatory to do so by reducing the plantings of grain and pulse crops, sunflowers, sugar beets or other crops. This should be accomplished mainly by plowing up low productivity grasses and by developing new lands. Such occupied fallow has proven its worth in the zone and thus it should be introduced into operations in a more active manner.

In order to raise the cropping power of grain crops, special importance is attached to achieving an optimum ratio between the winter and spring plantings. In accordance with the recommendations of scientific institutes, winter crops in the central chernozem zone must be planted on 22-25 percent of the arable land or one half of the grain crop plantings. However, they actually occupy only 16 percent here and in Lipetskaya Oblast -- 15, Tambovskaya Oblast -- 13 percent of the arable land. As a result only of having decreased their winter crop areas, the kolkhozes and sovkhozes in the chernozem zone sustain an annual shortfall of 1 million tons of grain.

The main shortcoming in the growing of winter crops is the absence of good predecessor crops and delayed sowing operations. At the present time, prior to the commencement of sowing, roughly one third of the areas are being prepared. Thus the sowing will be carried out very late on freshly plowed soil and following random predecessor crops. Hence there will be a great shortfall in the harvest and winter crop losses. In order to prevent this from happening, science recommends that the structure of the area under crops consist of 10 percent pulse crops, 10 percent other early harvest crops and 5 percent fallow. In such a case it will be possible to prepare the soil in a timely and high quality manner, during the best periods and to complete the sowing of the winter crops.

At the same time, improvements should be carried out in seed production operations, in the utilization of equipment and in the organization of labor, the required crops and varieties should be selected and the personnel trained. And the quicker the better. The agricultural organs must direct this work and ensure that the recommendations developed by science are actively introduced into operations at each kolkhoz and sovkhoz.

All work associated with improving the structure of the area under crops and the introduction and mastering of crop rotation plans must be subordinated to the one goal -- increasing the gross yields of grain. The task of achieving a maximum increase in the production of grain crops, including groat and pulse crops, has been, is and will continue to be the central task in agriculture, the most important sector of work. This must be the object of concentrated attention by specialists, farm leaders, the agricultural organs and all rural workers.

The Council of Ministers for the republic has provided the oblasts, rayons and farms with a memorandum from the Ministry of Agriculture and the All-

Russian Branch of VASKhNIL dealing with measures for increasing the production of grain during 1980. The methods to be employed for rasing cropping power and increasing the gross yields of grain are set forth in detail in this memorandum and, as well, the minimal volumes for grain production are defined. Taking into account the local conditions, extensive use should be made of these recommendations and they should provide the basis for taking an important forward step this year in developing the grain economy at each kolkhoz and sovkhoz.

Now a few words concerning sugar beets. The problems concerned with the development of beet production operations in the central chernozem zone have been discussed on more than one occasion. However, the situation is being corrected very slowly. Last year the plan for selling sugar beets to the state was fulfilled by only 57 percent. During this current five-year plan, the plan for supplying beets was low by more than 18 million tons and this exceeded the annual plan for selling beets to the state in the zone. Kurskaya and Lipetskaya oblasts fell far behind in their production. But even in these oblasts there are many farms which are obtaining high beet yields from year to year and fulfilling their plans for beet sales to the state. Even last year, a dry one, 64 kolkhozes and sovkhozes in Kurskaya Oblast successfully carried out their procurement plans, in Lipetskaya Oblast -- 47 and in Voronezhskaya -- 144 farms. Thus the potential is available for cultivating high sugar beet yields in all types of weather.

The reasons for the low sugar beet yields derive mainly from the fact that the technology for cultivating the beets is not being followed, the ground is not being prepared properly, the crop is being planted following poor predecessor crops, good seed is lacking and the sowing work and thinning out of the plants are being carried out on a very tardy basis.

In the meantime, the beet production operations are being fully supplied with mineral fertilizers and the deliveries of highly productive equipment are increasing. The principal task at the present time is that of raising the responsibility of the kolkhoz chairmen, sovkhoz directors and farm specialists for the status of affairs in the branch, for increasing the cropping power and gross yields and for ensuring unconditional fulfillment of the sugar beet procurement plans. This task can be solved only on the basis of purposeful organizational work being carried out by the agricultural organs and constant attention being given to the development of this branch by the soviets. Every attempt must be made to ensure that each hectare of sugar beet plantation becomes a plot characterized by a high culture of farming.

Recently, a reduced amount of attention has been given to a very important technical crop -- sunflowers. The production of oil-bearing seed is decreasing in a systematic manner and the procurement plan is being fulfilled by only 50 percent. The kolkhozes and sovkhozes in Tambovskaya and Belgorodskaya oblasts in particular are under an obligation to the state in this regard. During the past 4 years, these oblasts fulfilled their

state procurement plans for sunflowers by only 29 and 36 percent respectively. It is difficult to find another branch or crop reflecting such poor fulfillment of a plan. Yes and you will not find other oblasts having such low indicators. Indeed, even during the Eighth Five-Year Plan the oblasts in the central chernozem zone furnished two times more seed than is being obtained at the present time.

The unsatisfactory status of affairs with regard to the production and procurement of oil-bearing seed is explained mainly by low cropping power for the sunflowers. During the current five-year plan and compared to the Eighth Five-Year Plan, this cropping power, on the average for the zone as a whole, fell from 12.3 to 8.2 quintals per hectare and in Lipetskaya and Tambovskaya oblasts -- to 6 quintals.

Radical changes must come about with regard to the attitude being displayed towards sunflowers. This problem was examined in detail last year during a conference held in Krasnodar. Based upon the results of this conference, a comprehensive decree of the RSFSR Council of Ministers was adopted. This decree outlined measures for strengthening the logistical base of these procurement organizations and farms engaged in the cultivation of oil-bearing seed and for supplying mineral fertilizers to the kolkhozes and sovkhozes. The agricultural organs must intensify their organizational work associated with increasing the production and procurements of sunflower seed and they must carry out considerable improvements in this branch during this current year.

Permit me to say a few words concerning feed. The party's Central Committee is constantly directing the attention of the party, soviet and agricultural organs towards the need for strengthening the feed base. And this is understandable. "Everything that we wish to obtain from animal husbandry -- more meat, milk and other products," stated Comrade L.I. Brezhnev during the July (1978) Plenum of the CC CPSU, "is entirely dependent in the final analysis upon there being ample supplies of feed, moreover diverse types of high quality feed."

Last year, scientifically sound recommendations on methods for solving the feed problem were approved during the course of zonal conferences. The principal method for increasing the production of feed is that of raising the effectiveness of use of each hectare of land. On farms in the central chernozem zone, approximately 3 million hectares, or 25 percent of the arable land, are occupied by forage crops. This is without counting grain forage plantings. In addition, there are more than 2 million hectares of meadow and pasture land. Thus, there are more than 2 hectares of land per standard head of cattle. However, the feed yield from this area remains inadequate and the cropping power of the forage crops -- low. In Kurskaya, Tambovskaya and Lipetskaya oblasts, the yield from sown annual and perennial grasses for hay and green feed does not exceed 13-20 quintals and from natural grasses -- 3-4 quintals of feed units per hectare. The low yields lead to a situation wherein the kolkhozes and sovkhozes are forced into expanding their forage crop plantings on arable land.

Scientific data and the experience of leading workers have shown that it is possible to obtain no less than 40 quintals of feed units per hectare. Many farms and entire rayons are obtaining 50-60 quintals and more per hectare.

In solving the feed problem, great importance is being attached to selecting more intensive grass crops and varieties. Under the conditions found in the central chernozem region, alfalfa is considered to be an indispensable forage crop. When the correct agricultural cultivation practices are employed and the harvest work is carried out in a high quality and timely manner, this crop furnishes a yield of up to 100 and more quintals of feed units per hectare. This crop produces the greatest yield of protein per unit of space. However, the plantings of alfalfa on many farms continue to remain negligible and the yields low. For example, the proportion of alfalfa in the structure of perennial grasses in Belgorodskaya Oblast is 13 percent, in Kurskaya Oblast -- 7 and in Lipetskaya Oblast -- only 5 percent.

There are many other crops which, in terms of their productivity, surpass to a considerable degree those which are being cultivated at the present time out on the fields. Sudan grass is furnishing good yields of hay in many rayons -- 30-40 quintals per hectare. Awnless bromegrass, sainfoin and Italian millet also warrant attention. These crops should be introduced into operations on an extensive scale and in a rapid manner. Improvements in the structure of the feed fields do not require either additional capital investments or equipment and yet they produce great results.

An extremely weak link in the production of feed continues to be the production of seed for the grasses. The seed requirements are increasing with each passing year, while at the same time no increase is taking place in seed production and the plans for laying away seed remain unfulfilled. Moreover, the procurement of seed in some oblasts is decreasing. This year the farms in Belgorodskaya and Kurskaya oblasts are being supplied with only one half of the quantity of grass seed actually required. This seed shortage will preclude the possibility of improving the structure of the feed fields, of employing intensive varieties and crops on an extensive scale or of raising the productivity of the natural meadows and pastures. It bears mentioning that this also applies to pulse crops. During the next 2-3 years, a complete solution will have to be found for the problem of ensuring that the kolkhozes and sovkhozes are fully supplied with high quality seed for all of their crops. This requires the creation of specialized farms, the completion of construction of seed production stations and the allocation of adequate quantities of capital investments, equipment and fertilizers.

One feature of the zone is the possibility of utilizing, for livestock feed purposes, large quantities of waste products obtained from the processing industry and field crop husbandry. Sugar beet pulp is presently being stored mainly in pits, where it rapidly turns sour and loses up to 30 percent of the nutrients. The drying out of the pulp should be carried out

as rapidly as possible and it should be given to the animals in a mixture with other additives. Better use must also be made of straw. It must be fed to the livestock only in a processed form.

Industry is growing rapidly throughout the zone and the municipal population is increasing at a rapid rate. This population must be fed and thus industrial construction must be carried out in harmony with agricultural development. Dairy and vegetable zones should ideally be created around the industrial centers and specialized and highly intensive farms organized. These farms should be supplied with fine equipment and a strong feed base should be created for them. The annual milk yields at these farms, as required by the July (1978) Plenum of the CPSU Central Committee, must be no less than 4,000-4,500 kilograms of milk per cow.

The chernozem zone is a supplier of cheap beef. By no means have the opportunities for increasing beef production been exhausted here. The raising of young stock constitutes a bottleneck at the present time. Although the final fattening of large-horned cattle is being carried out more or less in an organized manner, this is not the case with regard to the maturing of animals. It is precisely during this stage that the young stock fall behind in their development and, once assigned to a fattening regime, are unable to adapt or furnish the required weight increases.

The path to be followed for increasing the production of beef consists of stimulating the creation of specialized farms and enterprises for the maturing of young stock, so as to ensure that the young stock will furnish high weight increases during all stages in their raising and fattening.

Pork production must be increased at a more rapid rate. Pig raising is a traditional branch for the zone. First of all, it will be necessary to increase the yield of young suckling pigs per sow, raise the average daily weight increases, curtail disease among the animals and increase the number of pigs.

Improvements must also be carried out in sheep raising operations. No longer can we tolerate the situation that has persisted during the past few years, wherein the number of sheep has not only not increased but indeed it decreased.

Serious attention must be given to the development of the private plots of the population. Each rural family must have a cow, pigs, sheep and poultry, it must be able to satisfy fully its own requirements for products and it must deliver its surplus products to the market. This aids greatly in improving the supply of food products for the population.

The party and government are carrying out a great amount of work aimed at strengthening the logistical base for the kolkhozes and sovkhozes. And this is exerting a positive effect on production. At the same time, the workload for tractors and grain and beet combines is still quite high on many farms

and there is a shortage of specialized equipment for harvesting peas, sunflower seed and other crops. Differences exist in the extent to which individual farms and rayons are being supplied with machines and equipment. This results from the fact that the industrial potential is still limited. However, a great amount of work is being carried out in connection with increasing the deliveries of equipment to the rural areas. This was called for during the July (1978) Plenum of the CPSU Central Committee and in the decrees adopted in connection with the implementation of its decisions.

Special importance is attached to achieving efficient utilization of the available equipment. Unfortunately, the situation is by no means favorable in this regard. The coefficient of shift work for tractors and other machines and their productivity are decreasing. Thus, the average daily output for a standard tractor, for the zone as a whole, amounted to only 7 hectares last year, or almost one and a half less hectares than in 1965. The output for a grain combine fell in all oblasts. The equipment idle time is considerable. During the past 2 years and as an average for the zone, 13 percent of the row-crop tractors were not used in operations and in Belgorodskaya Oblast -- 20 percent. Energetic measures are required on the part of the agricultural organs if the shortcomings in equipment operation are to be eliminated. The work must be organized in a manner so as to ensure that all machines without exception are repaired and participate in operations in a timely and high quality manner.

The state is carrying out a great amount of work aimed at improving economic relationships in agriculture. Many kolkhozes and sovkhozes are skillfully employing their economic controls and are achieving a high level of production profitability on this basis. Many examples could be cited revealing how the agricultural organs, in collaboration with science, are performing useful work in connection with improving planning and economic stimulation and searching for and accumulating experience in the use of more progressive forms for organizing production and control. In Voronezhskaya Oblast, for example, an experiment concerned with strengthening economic accountability warrants attention. Purposeful work is being carried out here in connection with smoothing out the economic conditions of management. The departmental system for organizing production has proven its worth in a number of areas.

Meanwhile, there are many shortcomings in this sector of work. The annual shortages in output and the reductions in the cropping power of the agricultural crops and in the productivity of animal husbandry have produced a situation wherein the majority of the kolkhozes and sovkhozes have begun operating on a non-profitable basis.

Another adverse trend has manifested itself. The growth in wages is surpassing to a considerable degree the rate of increase in labor productivity. During the years of the Tenth Five-Year Plan and compared to the previous five-year period, the production of agricultural products per worker increased by 14 percent throughout the zone as a whole, whereas wages increased by 28 percent. There is no need for explaining that labor

productivity is, in the final analysis, the principal indicator of efficiency. Persistent and laborious work is required on each farm in order to ensure that labor productivity grows at a faster rate compared to wages.

Just as in the past, we are still encountering many incidents involving violations of financial discipline, mismanagement and diverting of monetary and material resources.

One very important task of all economic organs and kolkhoz and sovkhoz leaders and specialists is that of carrying out specific and purposeful work aimed at lowering production costs, raising labor productivity and organizing production on a modern scientific-technical basis.

The labor resources for agriculture in the central chernozem zone require special attention. In recent years the demographic situation has deteriorated sharply. The rural population is migrating to cities and industrial centers at an accelerated tempo. As a result, a critical shortage of machine operators, livestock raisers and personnel in other mass professions is being experienced. If strong measures are not undertaken to improve the personnel situation, the situation may become even more aggravated.

It is particularly important for the farms in the zone to have permanent personnel. It is obvious that temporary workers cannot carry out the agricultural work in a skilled manner, much less cultivate such crops as sugar beets, sunflowers, vegetables and others. Yes and the soil in the chernozem zone requires highly skilled farmers.

Sociological studies have shown that rural personnel depart for cities and industrial centers owing to the absence of normal production, housing and cultural-domestic conditions in the rural areas. Meanwhile, the local soviet and agricultural organs are not utilizing fully the available reserves and opportunities for creating the necessary working and living conditions for the rural workers. It is sufficient to state that only 9-11 percent of the capital investments is being allocated for housing construction in the zone's oblasts. This is less than the average for the RSFSR and other regions of the republic. But even these negligible resources are not being utilized from year to year. The construction of schools, clubs and children's pre-school institutes is also being carried out in an extremely poor manner.

The soviet organs must establish strict controls, intensify the requirements with regard to the construction of housing and cultural-domestic projects and achieve the fulfillment and over-fulfillment of plans. In solving this problem, there must be no sparing of effort, time or resources!

At the same time, a maximum amount of attention and concern must be displayed for improving the work and rest regime for rural workers, for introducing into operations leading organizational methods and the complex mechanization

of production and for raising labor discipline. An efficient program for work with personnel was outlined in the recently adopted decree of the CPSU Central Committee, the USSR Council of Ministers and the AUCCTU entitled "On Further Strengthening Labor Discipline and Reducing Personnel Turnover in the National Economy." The leaders of agricultural organs, kolkhozes and sovkhozes are obligated to ensure fulfillment of this decree and completely staff each farm with skilled personnel.

Improvements in the intensification of agricultural production and in its economic efficiency are dependent to a considerable degree upon the specialists and their initiative, responsibility and organizational talents. Today there is an average of 24 licensed specialists per farm in the central chernozem zone. This represents a large detachment. Thus it is important for this group to perform at maximum capability.

The party, soviet and agricultural organs must raise the role and responsibility of the specialists in every possible way, create an atmosphere for them that will be conducive for fruitful and creative work, develop their initiative and activity and strive to achieve more complete utilization of internal production reserves and strict observance of the technological discipline and the recommendations of science. The opinions expressed by the specialists must be listened to, their valuable proposals supported and assistance must be furnished for introducing them into production operations. The technology of agricultural production must not be hampered by elements of voluntarism or excessive administration, as still occurs in some areas. Here a preference must be shown for the work and experience of the specialists.

* * *

In conclusion, M.S. Solomentsev expressed confidence in the fact that the agricultural workers in the central chernozem zone will in the future, by virtue of their selfless labor, strengthen the might of our homeland and achieve further successes in increasing the production of grain, sugar beets, meat, milk and other products of farming and animal husbandry. This will be their worthy contribution towards implementing the decisions handed down during the 25th party congress and the November (1979) Plenum of the CPSU Central Committee and fulfilling the tasks of the Tenth Five-Year Plan.

> In agriculture, to increase still further the production and sale to the state of farming and animal husbandry products. To raise labor productivity at the kolkhozes and sovkhozes by 35 percent above the average annual level for the Ninth Five-Year Plan.
>
> In 1980, to achieve a gross grain crop yield of no less than 135 million tons. To sell 54 million tons of grain to the state, including 1.1 million tons of pulse crops and 2.86 million tons of pulse crops, 31 million tons of sugar beets,

10.7 million tons of potatoes, 7.8 million tons of vegetables, 1.3 million tons of fruit and berries, 8.6 million tons of livestock and poultry, 33 million tons of mil, 26.3 billion eggs and 270,000 tons of wool.

To implement measures aimed at strengthening the feed base for animal husbandry. To procure no less than 42 million tons of hay, 30 million tons of haylage, 150 million tons of silage. During the winter period, to ensure that the kolkhozes and sovkhozes have no less than 24-26 quintals of feed units for each head of long-horned cattle. Make greater use of food waste products for livestock feed purposes.

The above requirements were taken from the socialist obligations of workers in the Russian Federation for 1980.

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REGIONAL DEVELOPMENT

UTILIZING OPPORTUNITIES IN CENTRAL CHERNOZEM ZONE

Utilizing Resources More Fully

Krasnodar SEL'SKIYE ZORI in Russian No 5, May 80 pp 10-14

[Article by I Shatilov, chairman of the presidium of the All-Russian Division of VASKhNIL [All-Union Lenin Academy of Agricultural Sciences], academician: "Utilizing the Resources of the Chernozem Zone More Fully"]

[Text] At the November 1979 Plenum of the CPSU Central Committee special emphasis was placed on the necessity to harmoniously develop the national economy, to raise the stability of agricultural output, to secure the uninterrupted supply of raw materials for industry and of foodstuffs and goods from light industry for the population and to raise the effectiveness of production and the quality of work. These extensive goals arise from an objective analysis of the economic conditions in our country and apply fully to agriculture in the Central Chernozem zone.

During the period following the March 1965 Plenum of the CPSU Central Committee great changes took place in the zone's kolkhozes and sovkhozes. In 1966-1979 enterprises were supplied with 184,600 tractors, 60,400 grain harvesting combines and over 73,000 trucks. The power-worker ratio in 1978 reached 20.7 horsepower; the capital-labor ratio--7,400 rubles. In 1976-78 alone capital investments into production and non-production building in kolkhozes, sovkhozes and interfarm enterprises reached almost 3 billion rubles. In kolkhozes and sovkhozes production funds exceeded 8 billion rubles, an increase of 34 percent over 1975. Today the region's agriculture is basically different from agricultural production in the 1960's in its more powerful and modern material-technical base, its size, its organization and its scale of introducing scientific achievements and technology and its management.

The average annual productivity of grain crops has increased from 13.7 quintals per hectare in 1961-1965 to 20.5 quintals in 1976-1978. There has been a slight increase in the productivity of sugar beets. The average annual gross agricultural production in all categories of enterprises in 1976-1978 comprised 5,644,000,000 rubles, which is 31 percent more than the average for 1 year during the Seventh Five-Year Plan. The average annual

procurement of grain during the aforementioned period has increased by 70 percent; of sugar beets--by 30; of potatoes--69; of vegetables--by a factor of 2.1; of fruits and berries--by a factor of 4.1; of milk--by 75 percent; of meat--by 92 percent; and of eggs--by a factor of 3.1.

While noting the positive results of work of agricultural enterprises, we must also mention the serious shortcomings which must be eliminated in order to move ahead successfully.

Among the important measures facilitating a more successful development of agriculture is the improvement of its management system. Life requires the development of a more comprehensive system than the previous one, and not for the zone as a whole, as has been the case until now, but in each oblast. Here it is essential to focus attention on the complex development and overall basis of recommendations on the distribution and intensification of specialization and concentration in agricultural production on the basis of interfarm cooperation and agroindustrial integration, on the transition of all branches to an industrial basis while keeping in mind that a multi-branched makeup and a poor concentration of production in kolkhozes and sovkhozes holds back the development of farming and animal husbandry, decreases the effectiveness of expenditures and becomes the obstacle to economic and thus scientific-technical progress. In such systems special attention should be given to the overall improvement in the effectiveness of utilizing land, water, energy, labor, material and financial resources, to coordinating agriculture to the system of the agro-industrial complex, to introducing progressive forms of labor organization, to the effective utilization of the newest technology, to securing cadres and to the social development of the village. Scientists and specialists of agricultural organs and enterprises must be recruited for developing agricultural management systems. The prepared recommendations must be widely evaluated and confirmed as official documents. Recently the presidium of the All-Russian Department of VASKhNIL examined this question and made decisions to basically improve recommendations on agricultural management systems. Such systems must become manuals for the directors and specialists of agricultural enterprises.

The most important factor within the system of agricultural management is the farming system. In the Central Chernozem belt there are 12 soil-climatic regions, most of which belong to the forest-steppe subzone (northern and central parts) and some of which belong to the steppe subzone. The forest-steppe zone is characterized by a large amount of precipitation, and the steppe by a continental climate and dryness. At the present time on a large territory in the region the crop-rotation system of farming is employed as before. It is in full accordance with the possibility of cultivating and producing large harvests of various crops here--grains, industrial, feed and vegetable crops.

The large selection of crops raised in the fields enables farmers to plan crop rotations according to the basic principles of classic crop rotations. Consequently, there can and must be various types of crop rotations which

more fully satisfy specific conditions and secure effective soil fertility and a growth in the yield of agricultural production per unit of area. Scientific and research enterprises of the Central Chernozem have examined and recommended various schemes of field, feed, vegetable and soil conservation crop rotations. Systems of fertilization, soil cultivation, crop care and seed farming have been developed.

The correct utilization of scientific recommendations in production yields good results. In 1979 in the Rossiya Kolkhoz, Rossoshanskiy Rayon, Voronezhskaya Oblast the yield of winter wheat comprised 30, and in the Aleynikovskiy Sovkhoz--34 quintals per hectare. And still, drought here was no less severe than in neighboring rayons. There are many such examples.

The dependability of developed agrotechnical complexes is well tested under experimental conditions which are frequently created by nature. Here is some data on this obtained by quality testing plots (see Table).

Productivity of Grain Crops During Dry Years on Strain-Testing Plots (Quintals per Hectare)

Crop	Voronezhskaya Oblast			Belgorodskaya Oblast			Tambovskaya Oblast		
	1972	1975	1979	1972	1975	1979	1972	1975	1979
Winter wheat	25.5	23.0	33.7	28.5	35.1	34.3	27.8	24.9	29.7
Barley	23.4	21.8	22.9	31.1	30.6	20.0	26.4	29.4	31.2
Millet	—	19.4	19.8	--	23.3	22.1	17.2	20.1	37.8
Corn for Grain	21.3	33.8	--	51.6	39.0	--	--	--	--

As we know, strain-testing plots are located on kolkhoz fields. Consequently, the results obtained by them are closest to production indicators. If we attentively analyze this data, it is easy to see that during years with severe drought the storehouse yield of winter wheat is not lower than 23 quintals per hectare; of barley--20; millet--17; and corn--21 quintals. In the Central Chernozem drought recurs every 3-4 years. For this reason it would be more correct to speak not about natural calamities but about normal, often repeated phenomenon in the forest-steppe and steppe zones. Because of this both the system of farming and agrotechnical methods must be zonal in nature.

The frequently changing weather forces agricultural specialists to find optimal solutions for each specific case. This in turn makes great demands of specialists, their knowledge, experience and organizational capabilities. Only a competent specialist who works constantly to upgrade his professional rank is capable of successfully organizing modern agricultural production.

"In no other activity," wrote K. A. Timiryazev, "is it necessary to weigh so many various conditions for success, to consider such many-sided information, nowhere will a one-sided point of view bring more damage than in farming." These words must be kept in mind by specialists and directors of kolkhozes and sovkhozes.

We frequently speak and write about the quality of farming. This is a capacious concept, including all of the factors that are the basis for raising the potential and effective fertility of the soil, technological processes, quality agrotechnology, etc. In generalizing many years of data from scientific institutions and leading enterprises we can draw one conclusion--the higher the quality of farming, the smaller the negative effect of drought and the larger and more stable the yield of field crops from year to year. For this reason purposeful work to raise the quality of farming must be realized persistently, everywhere and uninterruptedly. Of course, this does not mean that the developed agrocomplexes do not need further improvements.

As we have already noted, until the present only the crop rotation method of farming was used. It is quite apparent that a single system cannot satisfy all of the needs of branch management. In the steppe rayons, apparently, a grain-fallow-intertilled crop rotation is needed; or in some cases--a grain-fallow system of farming.

Unfortunately, scientific and experimental institutions in the Chernozem are seriously behind in the development of systems of farming that will fully meet the requirements of concretization and specialization of agricultural production. Even today the zone's enterprises do not observe the bases for the alternation of crops in crop rotations. For example, in 1979 in Voronezhskaya Oblast 350,000 hectares of winter crops and 883,000 hectares of spring barley were harvested; in Lipetskaya--192,000 and 412,000 hectares respectively; and in Tambovskaya--167,000 and 658,000 hectares. The excessive growth in the area in barley and its frequent return to a field previously used by it inevitably leads to the widespread existence of root rot in grain crops and to a sharp drop in yield. We should remember that barley is a poor predecessor for beets and sunflowers.

In the Central Chernozem oblasts large areas in winter wheat are resown in spring grains each year. The massive loss of winter wheat is based not only on the violation of the accepted agrotechnology but also on the insufficient winter-hardiness of this crop, which is inferior in this regard to winter rye. Now that good varieties of winter rye (Chulpan, Voskhod-1, Saratovskaya-4 and others) have been developed and are noted for their high productivity and resistance to lodging we feel that it is time to expand their area. Together with winter wheat it should occupy about half of the area allocated for grains.

At the present time there is a great deal of discussion about clean fallow. As has been emphasized more than once, it is effective when it is cultivated well, cared for and supplied with large doses of organic fertilizers. A joint session of the USSR Academy of Sciences and VASKhNIL in 1973 recommended increasing the area in clean fallow in the Central Chernozem to 4-5 percent of the crop-rotation area. This recommendation should be adhered to. Grains should occupy about 50 percent of the crop rotation area and in addition about 10 percent of the plowland should be sown in pulse crops. The expansion of pulse crops (mainly peas) will enable us to:

--solve the problem of feed protein to a significant degree;

--have a good predecessor for winter crops;

--decrease the deficit of nitrogen in farming;

--more rapidly clean fields of weeds.

The Central Chernozem oblasts are located in a unique epicenter for the effects of water erosion of the soil. Here there are 6.5 million hectares of potentially eroded soils, including 2.5 million in various stages of erosion. Completely removed from agricultural use by ravines were 134,000 hectares of plowland. The area of eroded soil in the zone increases by 60,000 hectares each year. According to the data of the All-Union Scientific-Research Institute of Soil Protection from Erosion, the washing-away of soil from each hectare of plowland with a slight slope comprises 4 tons, and with a slope of over 3 degrees--3-5 times more (12-20 tons per hectare). With the eroded soil the water removes a large number of nutrients and herbicides. As a result the effectiveness of organic and mineral fertilizers decreases and reservoirs are polluted. The fields lose nutrients equivalent to those found in 2.3 million tons of standard mineral fertilizer (120,000 tons of nitrogen, 60,000 tons of phosphorus, 590,000 tons of potassium). During years with snowy winters and intensive spring melting these losses sometimes reach 7 million tons of standard fertilizer. Kolkhozes and sovkhozes have all of the possibilities to realize such generally accessible methods of fighting water erosion as hole digging in plowland, interrupted harrowing, steplike and non-mouldboard plowing and the cracking of winter crops in order to prevent erosion on potentially-harmed areas. Plowing across the slope decreases soil erosion by up to 4 quintals per hectare and retains an additional 150-250 cubic meters of water. With such plowing utilizing interrupted harrowing 3-4 times less soil is eroded and an additional 300-350 cubic meters of water is retained per hectare. We would especially like to mention so-called contour plowing, which enables farmers to almost completely eliminate water erosion. Agricultural organs should be attentive to this measure and to utilize it in practice as soon as possible. Halting the destructive action of water erosion is the primary goal of field workers and all workers in agricultural organs.

The zone's kolkhozes and sovkhozes have a real possibility in coming years to increase the application of manure to 5 tons per hectare of crop-rotation area. This is the most realistic and commonly accessible method of increasing productivity and of transforming farming into a more stable and effective branch of agriculture. Nevertheless, until now few organic fertilizers were applied.

In 1977-1979 agriculture in our zone did not utilize 37 million tons of organic fertilizer. As calculations show, as a result of this kolkhozes and sovkhozes underproduced 865,000-940,000 tons of grain, 10.4 million tons of corn green mass and 8.5 million tons of sugar beets.

Specialists explain the incomplete utilization of reserves of local fertilizers by the insufficient quantities of clean and occupied fallow, the existing structure of sowing area, the shortage of specialized technology (manure spreaders, loaders of organic fertilizers). At the same time we must look at what other rayons are doing. For example we have the experience of field workers in Krasnodarskiy Kray. In 1979 in the Kuban' 7.5 tons of organic fertilizer was applied per hectare of plowland. This was done on fields where fertile pre-Caucasian chernozems are found!

Under the conditions of the Central Chernozem each ton of bedding manure applied to the soil with a consideration of results yields 100 feed units. According to overall data of the NIISKh [Scientific Research Agricultural Institute] of TsChP [Central Black Earth Belt] imeni V. V. Dokuchayev, the application per hectare of 20 tons of manure secures a growth in the productivity of grain by 4.5-5 quintals, of green mass of corn--by 50-60 quintals, of sugar beets--by 40-50 quintals. The protein content of grain increases by 1.5-2 percent, the content of raw gluten in the grain increases by 3-5 percent and the sugar content of beets grows by 0.2-0.3 percent. The productivity of crops in crop rotations increases by 18 percent as a whole.

Manure not only is a complex fertilizer, it is also an important source for replenishing organic matter in the soil. Experiments conducted by the Soil Institute imeni V. V. Dokuchayev in Kurskaya Oblast yielded the following results. Eight years after the plowing of the virgin lands the humus content in the meter layer of soil had decreased by 49 tons; after 30 years--by 66 tons; and after 67 years--by 146 tons. In addition to the decrease in the humus content there was a deterioration of the structural composition of the upper layers of soil, and the smallest specific retention of moisture in the meter soil layer of plowed chernozems dropped by 50-60 millimeters. In other words, the capacity of the soil to retain moisture had decreased by 500-600 tons on a single hectare. After all, this quantity of water is sufficient for the additional formation of 5-6 quintals of dry grain.

Manure also plays an important role as a soil disinfecting agent. With it is applied a large quantity of useful microflora, which in many cases successfully eliminates disease-causing microorganisms and prevents disease in cultivated crops.

In nature there is an objective law governing the synthesis and destruction of organic matter in the soil. These interrelated processes must be directed in such a way so as to make the soil more and more fertile. In particular it is necessary to stop burning stubble and to utilize the forming organic mass to replenish its reserves in the soil.

The kolkhozes and sovkhozes of the region now receive 3,296,000 tons of mineral fertilizers in standard quantities annually, amounting to 2.8 quintals per hectare of plowland. Mineral fertilizer deliveries increased by 82 percent from 1966-1970 to 1976-1978. Sugar beets are allocated 1.7

million tons of mineral fertilizers. Each hectare in sugar beets receives 420.5 kilograms of nutrients per year. It would seem that under such conditions the beet harvest would be high. Actually, this is not the case. During the Eighth Five-Year Plan the hectare yield of sugar beets was 170 quintals, during the ninth--130 and in 4 years of the current five-year plan--148 quintals. It is quite evident what the results of gross violations of agrotechnology are.

Attempts to raise the level of the harvest by one device or method cannot produce the desired results. V. I. Lenin once noted that "differences in economic organization, technology, etc. are summed up in productivity." A skilful use of fertilizer that is based on scientific data serves as a truly powerful factor in raising productivity. The agricultural management systems of the Central Chernozem and the recommendations on cultivating individual crops indicate how to correctly utilize fertilizers. It is necessary to clearly utilize these recommendations in kolkhozes and sovkhozes.

After the May 1966 Plenum of the CPSU Central Committee there was an intensive development of irrigated farming in the zone. During the years of the eighth and ninth five-year plans 231,000 hectares of irrigated lands were introduced. During 3 years of the current five-year plan irrigation systems have been built on 84,000 hectares. About 450 million rubles of state capital investments have been utilized to reclaim lands and develop them and to develop the production base of reclamation organizations. In 1976-1978 each irrigated hectare yielded 27.6 quintals of grain, 208 of sugar beets, 154 of vegetables, and 31.8 quintals of hay from perennial grasses. In 1978 irrigated lands, which comprised 2.1 percent of total agricultural lands, produced 45 percent of the vegetables, 25 percent of the hay and 40 percent of the green mass of perennial grasses in total kolkhoz and sovkhoz production. In 1978 the Kolkhoz imeni Frunze, Belgorodskiy Rayon, Belgorodskaya Oblast, collected 67.4 quintals of grains and 620 quintals of green mass of perennial grasses on irrigated lands. In the Arzhenka State Breeding Plant of Tambovskaya Oblast 55 quintals of winter wheat were produced; in the Zavety Il'icha Kolkhoz of Kirsanovskiy Rayon of the same oblast--52 quintals of hay from perennial grasses.

While noting the positive role of irrigation in increasing production output we must also mention that in many enterprises the yields on irrigated lands are still low. In coming years they must increase by 1.5-2 times. In order to do this we must eliminate mechanical work in utilizing irrigated lands as quickly as possible, introduce irrigation in vegetable farming, increase the application of organic and mineral fertilizers, strictly follow the irrigation regiment, and improve work to repair hydrotechnical structures and closed irrigation networks. When the technology of the irrigated field is assimilated well it is necessary to work to produce large programmed harvests. The zone's scientific institutions must become involved in this since they are obliged to check out the operation of developed mathematical models, to correct them when necessary and to develop a detailed technology for raising programmed harvests.

In 4 years of the current five-year plan the production of coarse and succulent feeds in the zone comprised 4,510,000 tons of feed units, or 9 percent more than in the preceding five-year plan. Nevertheless, the modern state of feed production is hindering the further development of animal husbandry. The proportion of hay has decreased significantly in the structure of feed consumption, and the proportion of concentrates has grown noticeably. In the agricultural enterprises of Tambovskaya Oblast the proportion of hay in an animal's ration decreased by 44 percent since 1965, by 46 in Lipetskaya, by 48 in Kurskaya, by 41 in Voronezhskaya and by 47 percent in Belgorodskaya. The proportion of concentrated feeds within the structure of forage consumption in Lipetskaya Oblast surpassed 44 percent and comprised 34-42 percent in other oblasts. We cannot tolerate such a situation further.

Feed production in the zone is focused mainly in field crop rotations. The area allocated for annual grasses comprised 888,000-939,000 hectares; that in perennial grasses--474,000-523,000 hectares in 1976-1979. The average productivity of grasses is approximately the same at 25 quintals per hectare. The low output of hay is based on the one hand on violations in agrotechnology and on the other on great losses during harvesting as a result of the unsatisfactory utilization of progressive technology during procurement. In the zone's enterprises only 18 percent of the procured hay is pressed; 14 percent is dried using active ventilation. Expensive drying technology, pickup bailers and installations for active ventilation are utilized poorly. It is quite evident that in productively operating existing technology it would be possible to increase the procurement of high quality hay by 3-5 and more times. The same applies to raising silage crops and to procuring silage and haylage.

A large reserve for increasing the production of succulent feeds is the haulm of sugar beets, which will annually yield 8 million tons of high-quality silage. In recent years about 50 percent of the haulm has been utilized for feed. It is necessary to find additional means of transportation for the complete transport of this valuable feed during beet harvesting, thereby improving the feed balance in enterprises.

In the zone's kolkhozes and sovkhozes 18 percent of agricultural lands are natural haylands and pastures. At the Kurskaya Oblast Agricultural Experimental Station and in the NIISKh TsChP imeni V. V. Dokuchayev methods have been worked out for putting meadows in gullies, enabling us to produce 4-5 tons and more of high-quality hay per hectare. In the Rodina Kolkhoz, Kamenskiy Rayon, Voronezhskaya Oblast, 571 hectares of sloping land have been put into meadow. After this the productivity of lands increased by a factor of 3.5-4. The area of plowland occupied by feed crops has been curtailed here by 300 hectares while there has been a simultaneous growth in hay procurement from 1,979 quintals in 1976 to 10,562 in 1978; in haylage--from 7,837 to 35,675 quintals respectively.

In 1976-1978 the productivity of natural haylands (including reclaimed) in all categories of enterprises in the region comprised only 14.4 quintals, or 84 percent of the plan. After radical improvements of natural feed lands

it is possible to rapidly increase hay production--by about 220,000 tons per year. If we examine the problem of feed production over the long-term with a consideration of a significant growth in the output of animal products, the necessity of expanding the area of irrigated lands used to raise feed crops becomes evident. On irrigated lands in addition to raising vegetables we should place feed crops with a long vegetative period--alfalfa, grass mixtures, root crops and corn. This will enable us to harvest a great deal of highly-nutritious feed from each hectare. In special crop rotations feed crops must occupy no less than 50 percent of irrigated lands.

The ever-growing pace of deliveries of technology to the village persistently demands an improvement in labor organization in accordance with the needs of scientific and technical progress. In comparison with 1970, energy capacities in the Central Chernozem (without steam power plants) have grown by 107 percent (13.3 percent per year). The consumption of electrical and heat energy on the basis of one worker in agricultural production comprises in the zone:

	1965	1970	1978
electrical energy, kilowatt hours	317	696	2,070
heat energy, thousands of kilocalories	no data		1,600

In 1978 each kolkhoz or sovkhoz worker in the region used 227 kilograms of standard fuel, which is 1,860 kilowatt-hours in terms of electrical energy. During the same year in animal husbandry alone there were over 12,500 boilers, 1,109 refrigerating plants and 626 units for preparing vitaminous meal in operation. Consequently, a new branch of energy has arisen in the village--combined heat and power supply, which is equivalent to electrification in the quantity of energy consumed.

It is not difficult to foresee the continued growth of energy consumption in heat and refrigerating plants of kolkhozes and sovkhozes. It will be necessary to develop corresponding services by heat and energy supply workers since a competent operation is security for the economic consumption of energy resources.

The kolkhozes and sovkhozes of the zone have a powerful technical base at their disposal. For example, the proper utilization of tractors and other machines would allow us to greatly curtail the schedule of field work, thereby yielding larger harvests. In 1978 the use coefficient of tractors fluctuated from 0.45 in the sovkhozes of Tambovskaya Oblast to 0.53 in the sovkhozes of Belgorodskaya Oblast. The output per stardard tractor is also low, fluctuating from 1,062 to 1,263 standard reference hectares. The automobile fleet is being used unsatisfactorily. In 1978 the use coefficient of trucks was only 0.63. They are resources for fulfilling all agricultural operations in the best possible time and in complete accordance with agrotechnical and zootechnical requirements.

The zone's oblasts have done a great deal to increase the training of machine operators. Whereas in 1965 only 33 percent of tractor and machine operators were of class 1 and 2 rank, in 1979 63 percent were. Unfortunately, their numbers are still lagging behind the pace of growth of the machine-tractor fleet. In 1965 there were 203 machine operators per 100 tractors; in 1979--only 137. This results in the idleness of technology and in prolonged work schedules. Thus, in 1978 the grain harvest in the oblast of the zone lasted from 26 to 32 days. The consequences of late harvesting are evident from the following data. At the Sudzhanskiy State Variety Plot of Kurskaya Oblast a delay of 10 days in the harvesting of winter wheat after full grain maturation decreased its yield by 2.2 quintals per hectare. At the Bobrovskiy State Variety Plot of Voronezhskaya Oblast a delay of only 5 days resulted in a decrease in threshing yield of Mironovskaya-808 of 1.3 quintals. A delay of 1 day in harvesting usually results in the loss of 1-1.5 percent of the harvest. This occurs because of the hydrolysis of starch and its transformation into sugar. The sugar in turn becomes water and carbon dioxide as a result of the respiration of the grain. This process is very intensive when the weather is damp during harvesting. Workers with practical experience know that if harvesting is prolonged until rainy weather occurs the yield will be smaller and the quality of the harvest will be worse.

Of course, the zone's kolkhozes and sovkhozes will receive more powerful tractors, combines, trucks and other technology each year, enabling farmers to complete agricultural operations at the optimal time. The efficient, dependable utilization of machinery will, as before, depend on the level of technical services, the corresponding material and technical base, the observation of the rules of the planning-precautionary system of services and the availability of qualified cadres.

The main way to develop agriculture is the industrial system of producing grain, vegetables, fruits and other agricultural products. As production forces grow, industrial methods which include flow-line technology not requiring manual labor must become more widespread. In this way we will be able to effectively utilize the fertility of the soil and the potential of new intensive-type varieties, to considerably decrease production losses during harvesting and transportation, to raise the productivity of labor and to decrease the need of a labor force in agriculture.

In our country large-scale experiments are being conducted on the search for ways to use technology better and to organize technical services optimally. In realizing specialization, concentration and interenterprise cooperation we must reach a state in which soil, man and technology are harmoniously interrelated, i.e. we must secure maximal growth of production output of high quality while simultaneously decreasing production expenses.

The process of interenterprise cooperation and agroindustrial integration in the Central Chernozem region has already been developed in the branches of animal husbandry. To a lesser degree it has encompassed the farming branches. At the same time the existing experience attests to the great advantages

of interenterprise formations. The experience of Voronezhskaya, Tambovskaya and Belgorodskaya oblasts speaks of the expediency of creating interfarm enterprises and production associations for the production of feeds, mixed fodder and feed mixtures, seeds of grain crops and perennial grasses, vegetables and fruits. In such forms with thorough specialization on a large production scale and utilizing the newest equipment and machinery, industrial methods of economic management are being introduced. The labor-intensiveness of production and material-financial expenditures decrease. It becomes possible to quickly assimilate the achievements of science and progressive experience.

Also important are intraenterprise specialization and concentration of production in kolkhozes and sovkhozes. Under such conditions it becomes possible to utilize the branch principle of management, to make the transition to the so-called shop structure in which the organizational role of specialists grows. It transforms specialists from advisors into direct managers of the branch, which has an immediate effect on raising production effectiveness.

Under present conditions, in which the machine operator has become the main production force in the village and in which his skill and mastery wholly affect large and stable harvests, it is essential to disseminate the work experience of cost-accounting brigades and links. Such collectives are materially interested in the best utilization of all production resources they have at their disposal.

The region's scientific institutions must render aid to village workers regarding a more complete utilization of existing large resources in enterprises for increasing the production of grain, feed and livestock products. One of their most important goals consists of the transition to the introduction of scientific achievements into production from single enterprises to a large-scale effort encompassing all of the rayons in the zone. The collective of any scientific institution must be a distinctive, self-adjusting system which would find the optimal solutions under any circumstances. An especially great deal must be done to improve the utilization of our primary riches--land.

The time has come for a detailed development of a technology for raising various crops with a consideration of microzones and existing weather conditions. Economists-agronomists are obliged to develop and provide precise recommendations to kolkhozes and sovkhozes on many questions related to concentration, specialization and interenterprise cooperation. All scientific collectives must recognize the following: Science can become a genuine production force only if its results are made available to production collectives.

At the July 1978 Plenum of the CPSU Central Committee Comrade L. I. Brezhnev said: "It is important now to direct the entire arsenal of agrotechnical methods, to utilize all possibilities and resources and to subordinate the work of local party, soviet and agricultural organs, directors and specialists

of enterprises, workers of sovkhozes and kolkhozes to the goal of producing a maximal grain yield, raising soil fertility and improving the quality of farming." These words contain the work program for a long time to come.

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Achieving Stable Agricultural Development

Moscow ZEMLEDELIYE in Russian No 6, Jun 80 pp 2-5

[Article by I. S. Shatilov, chairman of the presidium of the All-Russian Division of VASKhNIL: "Utilizing Possibilities Better"]

[Text] During the period after the March 1965 Plenum of the CPSU Central Committee considerable positive changes occurred in the agriculture of the Central Chernozem Zone. It began to be characterized by a larger production volume, a high level of mechanization, a better organization for introducing scientific achievements, and large-scale operations.

The average annual productivity of grain crops has grown from 13.7 quintals per hectare in 1961-1965 to 20.5 quintals in 1976-1978; the productivity of sugar beets has increased somewhat. The average annual gross production of agriculture in all categories of enterprises in 1976-1978 increased by 31 percent in comparison with the Seventh Five-Year Plan. The average annual grain procurement for the aforementioned period increased by 70 percent; sugar beets--30; potatoes--69 percent; vegetables--by a factor of 2.1; fruits and berries--by a factor of 4.1; milk--by 75 percent; meat--by 92 percent; and eggs--by a factor of 3.1.

While noting the positive results of the work of agricultural enterprises we cannot fail to mention the serious shortcomings which must be eliminated in order to successfully move forward.

The zone's agriculture is developing at an insufficient pace. Whereas during the Eighth Five-Year Plan the average annual gross agricultural production output increased by 16 percent as compared with the previous five-year plan, in the ninth as compared with the eighth the increase was only 5 percent. During the current five-year plan too the zone's agriculture is developing slowly.

The milk productivity of cows has practically remained at 1965 levels and does not exceed 2,200 kilograms. Avarage daily weight gains are low.

In solving the problems we have we must always remember the limited nature of existing resources, primarily land, water and labor. Whereas in 1934 in our country there were 1.34 hectares of plowland per individual, in 1978 the figure has dropped to only 0.87 hectares. An unfavorable demographic situation has resulted in the fact that the country is experiencing a shortage in the work force. The problem of water resources is even more acute. For this reason agricultural production must be oriented towards obtaining a maximal return on each quintal of fertilizer, each cubic meter of

of water, each ton of fuel, each man-hour of work time, etc. This is now the strategic goal of agricultural production. Agricultural science will play a large role in solving the problem.

"It is our great party duty to precisely count and effectively utilize every ruble, every hour of labor and every ton of production, to finally eliminate mismanagement and slipshodedness," said L. I. Brezhnev at the 25th CPSU Congress. These words contain the work program and the demands of our party for all Soviet people.

The July 1978 Plenum of the CPSU Central Committee once again emphasized the importance of further increasing the production of grain and feeds. The kolkhozes and sovkhozes of the Central Chernozem Zone must make a considerable contribution in meeting this goal.

During 1966-1979 average annual gross grain production according to five-year plans and the productivity of grain crops have remained practically at the same level (17.9-18.2 quintals per hectare). Of course we cannot be satisfied with this.

A standstill in grain and other production in the zone can be explained by many things. The most important of these is the inadequacy in the system of agricultural management, in the system of farming. Unfortunately, the previously developed system of agricultural management in the Central Chernozem Zone did not deal successfully with questions of improving management, of the economic mechanism of management, of labor organization and of the use of labor resources, all of which are acquiring a decisive significance under modern conditions. Modern industrial technologies of agricultural and animal production output are insufficiently reflected.

Life requires the development of a system of agricultural management not for the zone as a whole, as has been done until now, but for each oblast individually. Here it is essential to focus attention on the complex development and overall foundation for specific recommendations on distributing specialization and concentration in agricultural production, on making it more thorough on the basis of interenterprise cooperation and agroindustrial integration as well as of the transition of all branches to an industrial base. Within agricultural management systems special attention must be given to raising the overall effectivness of utilizing land, water, energy, labor, material and financial resources and to the coordination of agriculture to the entire system of the agroindustrial complex.

The most important component of the agricultural management system is the farming system. In the Central Chernozem Zone there are 12 soil-climactic rayons, most of which belong to the forest-steppe subzone (northern and central parts) and so[illegible] the steppe subzone. The forest-steppe zone is characterized by a large quantity of precipitation; the steppe zone--by continentality and dryness. At the present time in most of the zone the farming system is that of crop rotation. This system is in full accordance with the possibility of cultivating and producing large yields of various crops--grains, technical, feed and vegetable crops that grow well under the given conditions.

The large selection of crops grown in the fields enables us to plan crop rotations according to the fundamental principles of classic crop rotation. Under these conditions there can and must be numerous types of crop rotations which will more completely satisfy specific conditions and secure an increase in the effectiveness of soil fertility and in the yield of farm products per unit of area. Scientific and experimental institutions in the zone have examined and recommended for production various schemes of field, feed, vegetable and soil-conservation crop rotations. Systems of fertilization, soil cultivation, crop care and seed farming have been developed. The proper utilization of scientific recommendations in production yields good results. Thus, during dry 1979 the Rossiya Kolkhoz and the Aleyshikovskiy Sovkhoz of Rossoshanskiy Rayon, Voronezhskaya Oblast, produced yields of 30 quintals and more of winter wheat per hectare. The yields of agricultural crops that are produced on strain-testing plots, where a scientifically-based agrocomplex is utilized, attest to the greater possibilities of kolkhozes and sovkhozes in the zone (see Table).

Productivity of Grain Crops During Dry Years on Strain-Testing Plots (Quintals per Hectare)

	Voronezhskaya Oblast			Belgorodskaya Oblast			Tambovskaya Oblast		
Crop	1972	1975	1979	1972	1975	1979	1972	1975	1979
Winter wheat	25.5	23.0	33.7	28.5	35.1	34.3	27.8	24.9	29.7
Barley	23.4	21.8	22.9	31.1	30.6	20.0	26.4	29.4	31.2
Millet		19.4	19.8		23.3	22.1	17.2	20.1	37.8

In the Central Chernozem Zone drought recurs every 3-4 years. Consequently, farming systems here must be directed primarily at eliminating drought, i.e. they must be flexible. This, in turn, makes great demands on specialists, on their knowledge, experience and organizational capabilities. Only a competent specialist who works constantly to upgrade his professional rank is capable of successfully managing modern agricultural production.

"In no other activity," wrote K. A. Timiryazev,"is it necessary to weigh so many various conditions for success, to consider such many-sided information, nowhere will a one-sided point of view bring more damage than in farming." This behest of a great scientist must be known to all kolkhoz and sovkhoz specialists and directors and followed by them.

We frequently speak and write about the quality of farming. This is a capacious concept, including all of the factors that are the basis for raising the potential and effective fertility of the soil, technological processes, quality agrotechnology, etc. The integral indicators of quality farming are the level of productivity and the yield of quality products per unit of area. In generalizing many years of experiments in scientific institutions and leading enterprises we can draw one conclusion--the higher the quality of farming, the smaller the negative effect of drought and the larger and more stable the yield of field crops from year to year. For this reason, purposeful work to raise the quality of farming must be realized persistently, everywhere and uninterruptedly.

Of course, this means that the developed agrocomplexes require constant improvements. Unfortunately, published recommendations frequently give false advice, as for example in the use of specific doses of fertilizer. What if the enterprise does not have such possibilities, if there is a shortage of fertilizer? Science does not give us clear answers on this and other problems.

We need detailed elaborations on questions of soil cultivation as concerns individual soil differences and microzones.

Until now the zone has utilized basically one system of farming--crop rotation. This is insufficient today, of course. The steppe rayons will evidently need a grain-fallow-intertilled crop rotation, and in some cases--a grain-fallow system of farming.

Unfortunately, the scientific and experimental institutions in the zone are seriously behind in the development of farming systems that will fully satisfy present-day requirements for developing agricultural production.

In a number of enterprises in the zone the bases for crop alternation in crop rotation are not adhered to even today. For example, in recent years there has been a sharp increase in the area in barley, which has begun to surpass the area in winter crops.

Barley is a poor predecessor for sugar beets, sunflowers and other crops. The great saturation of crop rotations with barley inevitably leads to the widespread distribution of root rot in grain crops, to the sharp drop in yield and to the death of winter crops. Now that good varieties of winter rye (Chulpan, Voskhoz-1, Saratovskaya-4 and others) have been developed, noted for their high productivity and resistance to lodging, we feel that the area in winter crops should be expanded by using more rye. Winter wheat and winter rye should occupy about half of the grain fields in the zone.

At the present time there is a great deal of discussion in the zone about clean fallow. A joint session of the USSR Academy of Sciences and VASKhNIL in 1973 recommended increasing the area in clean fallow in the Central Chernozem to 4-5 percent of the crop-rotation area. We feel that this recommendation should be followed. At the same time, everyone should understand that clean fallow is properly effective when it is well cultivated, cared for and supplied with large doses of organic fertilizers. Grains should occupy about 50 percent of the crop rotation area and 10 percent should be pulse crops. An expansion of the area in pulse crops (primarily peas) will enable us to a significant degree to solve the problem of feed protein, to improve the composition of predecessors for winter crops, to decrease the deficit of nitrogen in farming and to more rapidly clear the fields of weeds.

The Central Chernozem Zone is located in a unique epicenter for the action of water erosion of the soil. There are great losses to agriculture if there is an absence of measures to combat erosion.

According to summarized data from scientific institutions the underproduction of yield on weakly-eroded soil is 10-20 percent; on average eroded soils--30-50 percent; and on extremely eroded soils--60-80 percent. Sugar beets, sunflowers, corn and winter wheat are particularly sensitive to erosion.

Science has developed a complex of measures to combat water erosion of the soil. Their use is very effective, as we see from the following summarized data:

Soil Conservation Measure	Increase in Grain Yield, (Quintals/Ha)	Decrease in Soil Erosion (M^3/Ha)	Water Retention (M^3/Ha)
Hole digging of plowland	1.9	0.2	200-270
Interrupted harrowing	1.2	8.2	300-350
Steplike plowing	2.4	5.8	100-120
Non-mouldboard soil cultivation	1.9	3.9	100-150
Splitting the soil in winter wheats	1.9	1.4	60-200

Plowing across the slope decreases soil erosion by up to 4 quintals per hectare and retains an additional 150-250 cubic meters of water per hectare. Plowing across the slope and utilizing interrupted harrowing decreases erosion by a factor of 3-4 and additionally retains 300-350 cubic meters of water per hectare. The aforementioned measures are easily accessible to all enterprises in the zone.

In 1979 on the fields of kolkhozes and sovkhozes in the zone all types of counter-erosion soil cultivation methods were utilized on an area of only 2.5 million hectares, although it was possible to do this on the entire area of eroded plowland.

We should especially mention so-called contour plowing, which almost fully enables us to eliminate the erosion of soil by water.

Halting the destructive action of water erosion is the primary goal of field workers and all workers in agricultural organs.

Let us say a few words about the fertilization of fields.

During the last 12 years the application of organic fertilizers increased in the zone from 1.2 to 2.4 tons per hectare of plowland. This is significantly less than existing possibilities, which increase with the growth of animal husbandry. Calculations show that because of the incomplete utilization of organic fertilizers kolkhozes and sovkhozes in the zone underproduced 865,000-940,000 tons of grain, 10.4 million tons of green mass of corn and 8.5 million tons of sugar beets in 1977-1979.

The incomplete utilization of reserves of organic fertilizer can be explained by insufficient quantities of clean and occupied fallow and the shortage of technology. To a certain degree this is justified, but success mainly depends on the organization of the enterprise and on the skill to utilize existing possibilities correctly. For example, in Krasnodarskiy Kray as a result of increased attention to the accumulation and utilization of organic fertilizers and to the creation of specialized subdivisions (fertility detachments, chemization points) in enterprises, the application of organic fertilizers increased to 8 tons per 1 hectare of plowland in 1979. It should always be remembered that the basis for soil fertility is humus, and manure is the main source for securing a positive balance of humus in the soil.

Unfortunately, until recently the content of organic matter in the soil has been decreasing, which is cause for alarm. In order to halt this process and to achieve an increase in humus content we must not only realize all possibilities for increasing the application of organic fertilizers but also utilize other sources for replenishing reserves of organic matter in the soil by, for example, stubble remains or by the sowing of perennial grasses.

Under zonal conditions each ton of bedding manure applied to the soil with a consideration of results yields 100 feed units. Manure plays an important role as a soil disinfecting agent. With the manure the soil receives a large quantity of useful microflora which in many cases successfully destroys disease-causing microorganisms and prevents disease in cultivated plants. This property of organic fertilizers is now acquiring a special significance in connection with the introduction of specialized crop rotations.

The zone's kolkhozes and sovkhozes have the real potential for increasing manure application to 5 tons per hectare of plowland in the near future. We must fight for this because this is the most realistic and accessible method of effective and stable farming.

In recent years the zone's kolkhozes and sovkhozes have been receiving 3.3 million tons of mineral fertilizers in standard ratios, or 2.8 quintals per hectare of plowland. For sugar beets alone 1.7 million tons of mineral fertilizers are allocated. It is our goal to increase the effectiveness of mineral fertilizers.

Irrigation is very important in the Central Chernozem Zone in raising the effectiveness of farming as well as its stability. After the May 1966 Plenum of the CPSU Central Committee there was an intensive development of irrigated farming in this zone. During the years of the eighth and ninth five-year plans 231,000 hectares of irrigated lands were introduced. During 3 years of the current five-year plan irrigation systems have been built on 84,000 hectares. About 450 million rubles of state resources have been spent on land reclamation. However, the return on these expenditures is still low. In 1976-1978 irrigated lands produced an average of 27.6 quintals per hectare of grain, 208 of sugar beet roots, 154 of vegetables and 31.8 quintals per hectare of hay from perennial grasses.

The experience of leading enterprises shows that irrigated lands can and must provide a greater return. For example, in 1978 the Kolkhoz imeni Frunze, Belgorodskiy Rayon, Belgorodskaya Oblast, produced a grain yield on irrigated land of 67.4 quintals per hectare and a yield of green mass from perennial grasses of 620 quintals per hectare. In the Arzhenka State Breeding Plant of Tambovskaya Oblast winter wheat yielded 55 quintals per hectare of grain, and the Zavety Il'icha Kolkhoz of Kirsanovskiy Rayon in the same oblast produced 52 quintals per hectare of hay from perennial grasses.

We must work as quickly as possible to move vegetable farming to irrigated lands, to eliminate mechanical work in the utilization of irrigated lands, to increase the application of organic and mineral fertilizers, to strictly maintain the irrigation regiment and to improve the work to repair water engineering structures and closed irrigation networks. With a good assimilation of irrigation technology in the field we will have to move toward achieving large programmed harvests. The scientific institutions in this zone must become actively involved in this.

An acute problem in the continued development of zonal agriculture is increasing the production of feeds and improving their quality. The existing positive results in this are still clearly insufficient for satisfying the needs of animal husbandry. The problem lies not only in the low quantity and quality of the feeds, but also in their inefficient structure. First of all we have in mind the increasing proportion of concentrates in fodder and the decrease of hay as well as other forms of inexpensive feeds. For example, in Lipetskaya Oblast the proportion of concentrates within forage structure exceeded 44 percent; in other oblasts it equals 34-43 percent. We cannot tolerate this situation further because the needs for feed grain are satisfied by means of state resources. The tendencies in this matter are as follows. Beginning in 1971 the allocation of concentrated feeds from state resources has doubled. We also cannot tolerate the sharp drop in hay production. Feed production in the zone is concentrated mainly in field crop rotations. In 1976-1979 the area in annual grasses comprised 888,000-939,000 hectares; in perennial grasses--474,000-523,000 hectares. The average hay yield from annual and perennial grasses was approximately equivalent, equalling 25 quintals per hectare. This can be explained on the one hand by a violation of agrotechnology and on the other by great losses during harvesting because of a violation of technology. In the enterprises of the zone only 18 percent of the procured hay is pressed and only 14 percent is dried by means of active ventilation. This occurs even with the utilization of expensive special technology (pickup bailers, installations for active ventilation, etc.).

If in the future technology in feed production will be utilized poorly then no increase in the number of machines will correct the situation. The same in true of raising silage crops and of procuring silage and haylage. The zone's enterprises are only 34 percent supplied with capital haylage-silage structures, 5 percent--with storage for grass meal, and 1 percent with good storage facilities for root crops. All of this is leading to the deteriora-

tion of feeds and to a worsening of their quality. The directors of oblasts, rayons and enterprises in the TsChP are still not taking dependable measures to create a good material and technical base for feed production.

The seed farming of feed crops requires serious improvements. Ten seed-farming stations and 86 specialized enterprises have been created for raising seed. Nevertheless, many enterprises work unsatisfactorily and do not fulfill the seed procurement plans, especially for clover, alfalfa and awnless brome grass.

Without well-organized seed farming it is impossible to raise the productivity of hay or green mass of grasses. Methods and complexes for raising good seed harvests of grasses have been developed by scientific institutions and tested under production conditions. These recommendations must be widely utilized.

A large reserve for increasing the production of succulent feeds is the haulm of sugar beets, which will annually yield 8 million tons of high-quality silage. In recent years about 50 percent of the haulm has been utilized for feed. We must find the possibilities for the complete utilization of this valuable feed.

In the zone's kolkhozes and sovkhozes 18 percent of agricultural lands are natural haylands and pastures. At the Kurskaya Oblast Agricultural Experimental Station and in the NIISKh TsChP imeni Dokuchayev methods have been worked out for sowing meadows in gullies, enabling us to produce 4-5 tons and more of high-quality hay per hectare.

In the Rodina Kolkhoz, Kamenskiy Rayon, Voronezhskaya Oblast, 571 hectares of sloping land have been put into meadows, increasing the productivity of this land by a factor of 3.5-4. The area of plowland occupied by feed crops has been decreased here by 300 hectares, while there has been a simultaneous increase in hay production from 1,979 quintals in 1976 to 10,562 quintals in 1978; silage production--from 7,837 to 35,675 quintals respectively.

In 1976-1978 the average productivity of natural haylands (including reclaimed) in all categories of enterprises comprised only 14.4 quintals per hectare, or 84 percent of plan. After the radical improvement of natural feed lands it is possible to rapidly increase hay production by about 220,000 tons annually.

In examining the problem of feed production over the long-term with a consideration of significant growth in animal production output it becomes clear that it is necessary to increase the area of irrigated lands allocated for feed crops. In addition to raising vegetables on irrigated lands, we should raise feed crops with a long vegetative period such as alfalfa, grass mixtures, feed root crops and corn, enabling us to produce great quantities of highly-nutritious feed per hectare. No less than 50 percent of irrigated land in special crop rotations should be occupied by feed crops.

At the present time there has been considerable experience gathered regarding the use of straw to feed livestock. Straw is subject to treatment in autoclaves and yields feed that animals like to eat. In Western Siberia good results have been achieved in preparing special types of feed from straw. It is crushed, moistened and leveled into a thin layer of 8 kilograms per 1 m^2 of surface. Then barley seeds are evenly sprinkled on this (2 kilograms per square meter). The seeds germinate and the roots penetrate the entire straw mass. When the barley forms two leaves the entire mass is fed to cows. One kilogram of this mass contains 0.2 feed units and up to 40 milligrams of carotene. One square meter of surface can yield 40-50 kilograms of valuable feed. Siberians have named this feed zel'kos (greens, feed, straw). Of course experiments and a careful examination of technology with a consideration of local conditions are necessary. We must find new ways of using straw for animal fodder. Scientific institutions are obliged to become involved in this.

The NIISKh TsChP has developed a technology for silaging straw.

The kolkhozes and sovkhozes of the Central Chernozem belt must completely harvest all straw and prepare good fodder from it.

In conclusion we would like once again to emphasize the great importance of improving work to introduce scientific achievements into agricultural production. Each scientific-research institution must react with sensitivity to production demands and must actively help kolkhozes and sovkhozes to assimilate new technological and work methods.

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